



US Army Corps  
of Engineers  
Waterways Experiment  
Station

## Equipment for Contaminated Sediment Dredging

by *Trimbak M. Parchure*

DTIC QUALITY INSPECTED

Approved For Public Release; Distribution Is Unlimited

19961113 161

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.



PRINTED ON RECYCLED PAPER

# Equipment for Contaminated Sediment Dredging

by Trimbak M. Parchure

U.S. Army Corps of Engineers  
Waterways Experiment Station  
3909 Halls Ferry Road  
Vicksburg, MS 39180-6199

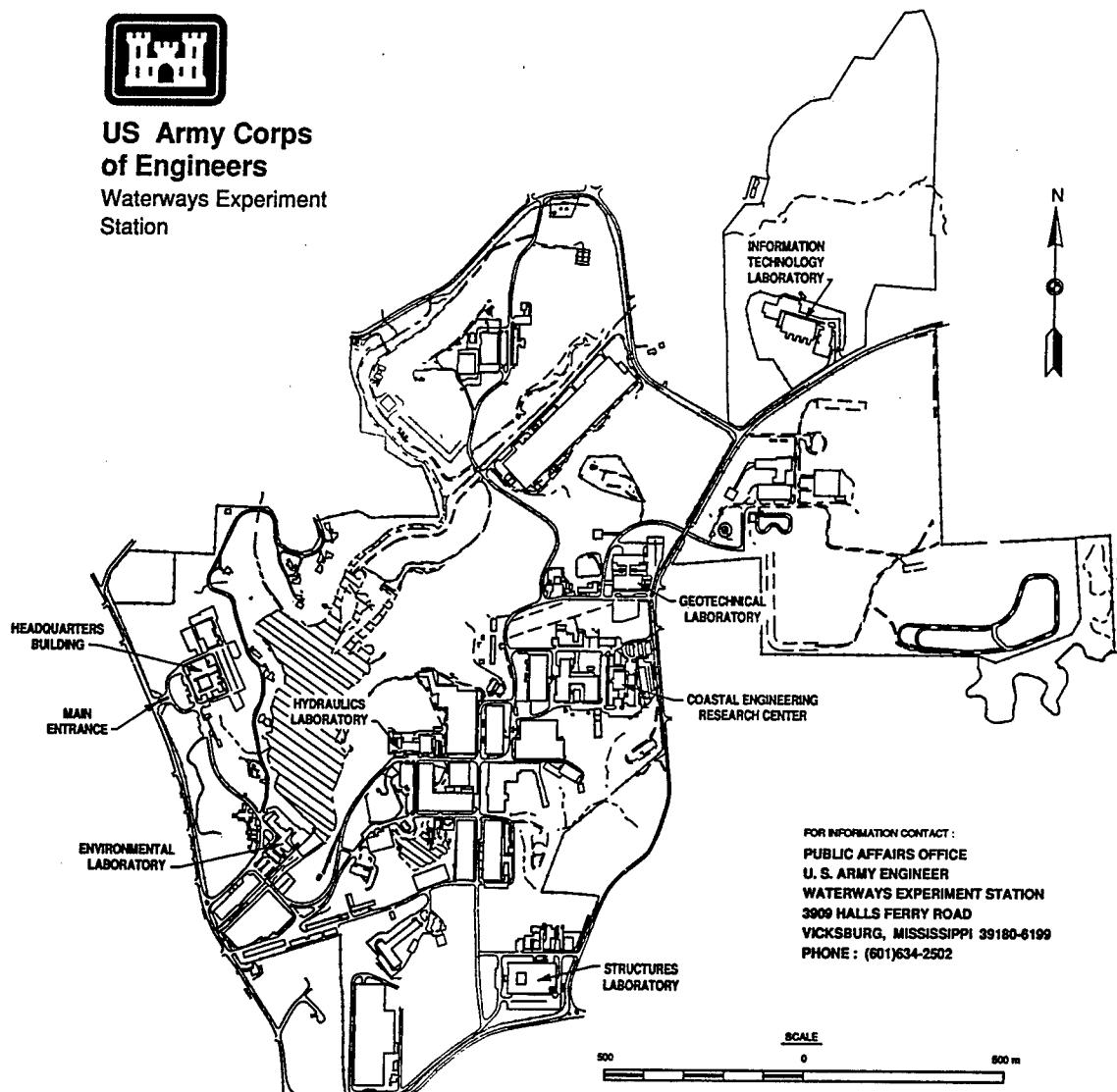
Final report

Approved for public release; distribution is unlimited



**US Army Corps  
of Engineers**

Waterways Experiment  
Station



**Waterways Experiment Station Cataloging-in-Publication Data**

Parchure, T. M. (Trimbak Mukund), 1943-

Equipment for contaminated sediment dredging / by Trimbak M. Parchure ; prepared for U.S. Army Corps of Engineers.

100 p. : ill. ; 28 cm. -- (Technical report ; HL-96-17)

Includes bibliographical references.

1. Contaminated sediments. 2. Dredging -- Techniques. 3. Dredging -- Equipment and supplies. I. United States. Army. Corps of Engineers. II. U.S. Army Engineer Waterways Experiment Station. III. Hydraulics Laboratory (U.S. Army Engineer Waterways Experiment Station) IV. Title. V. Series: Technical report (U.S. Army Engineer Waterways Experiment Station) ; HL-96-17.

TA7 W34 no.HL-96-17

# Contents

---

|   |    |
|---|----|
| Preface .....   | v  |
| Conversion Factors, Non-SI to SI Units of Measurement .....                 | vi |
| 1—Introduction .....  | 1  |
| 2—Background .....  | 2  |
| 3—The Problem .....   | 3  |
| 4—General Comments .....  | 5  |
| 5—Equipment Survey .....  | 6  |
| 6—Promising Equipment .....   | 8  |
| Keene Engineering Company, Northridge, CA .....                             | 9  |
| Aquatics Unlimited, Martinez, CA .....                                      | 9  |
| Ellicott Machine Corporation, Baltimore, MD .....                           | 9  |
| Dredgemasters International, Hendersonville, TN .....                       | 10 |
| Dredging Supply Company, Harvey, LA .....                                   | 10 |
| Innovative Material Systems, Olathe, KS .....                               | 11 |
| Oceaneering International, Inc., Upper Marlboro, MD .....                   | 11 |
| 7—Overseas Development .....  | 13 |
| 8—Additional Information .....  | 15 |
| Bibliography .....  | 16 |
| Appendix A: Lists of Companies Contacted .....                              | A1 |
| Appendix B: List of Companies Used for Present Information Processing ..... | B1 |

|  |    |
|--|----|
| Appendix C: Copy of Letter Sent for Obtaining Information on Dredgers<br>Suitable for Contaminated Sediment Dredging . . . . . | C1 |
| Appendix D: List of Companies Which Sent Information Under Present<br>Survey . . . . .   | D1 |
| Appendix E: Response Received from Companies Under Present<br>Survey . . . . .   | E1 |
| Appendix F: List of Companies with Promising Equipment for Contaminated<br>Sediment Dredging . . . . .                         | F1 |
| Appendix G: Details of Promising Equipment . . . . .   | G1 |
| SF 298   |    |

## Preface

---

This survey was conducted by personnel of the Hydraulics Laboratory of the U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS, in 1993. Funding for this project was received through the Dredging Operations Technical Support (DOTS) program.

The study was conducted by Dr. Trimbak M. Parchure, Waterways and Estuaries Division, Hydraulics Laboratory, under the general supervision of Messrs. William H. McAnally, Jr., Chief, Waterways and Estuaries Division; Robert F. Athow, Acting Assistant Director, Hydraulics Laboratory; and Richard A. Sager, Acting Director, Hydraulics Laboratory. Messrs. McAnally and William D. Martin, Chief, Hydro-Sciences Division, Hydraulics Laboratory, provided encouragement and guidance during the course of the project. Advice received from Dr. Robert M. Engler and Mr. Thomas R. Patin of Environmental Laboratory, WES, is gratefully acknowledged.

Cooperation offered by the various vendors of dredging equipment in the United States is greatly appreciated.

During the preparation and publication of this report, Dr. Robert W. Whalin was Technical Director of WES. Commander was COL Bruce K. Howard, EN.

*The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.*

# Conversion Factors, Non-SI to SI Units of Measurement

---

Non-SI units of measurement used in this report can be converted to SI units as follows:

| Multiply      | By        | To Obtain    |
|---------------|-----------|--------------|
| cubic yards   | 0.7645549 | cubic meters |
| feet          | 0.3048    | meters       |
| inches        | 25.4      | millimeters  |
| pounds (mass) | 0.4535924 | kilograms    |

# 1 Introduction

---

Under the research program entitled Improvement of Operations and Maintenance Techniques (IOMT), a survey of portable hydraulic dredges was undertaken at the Hydraulics Laboratory of Waterways Experiment Station, Vicksburg, MS. Technical Report HL-83-4 (Clark 1983) was published on this study in March 1983. Under the program Dredging Operations Technical Support (DOTS), the guidance provided in the earlier Technical Report was updated and expanded in order to address the aspect of contaminated sediment dredging. Information was compiled on dredging equipment, dredging procedures and monitoring techniques for dredging contaminated sediments.

The objective of the present report is not to select, recommend or promote any particular equipment currently available in the U. S. market, but to simply compile and present the information obtained through an extensive market survey in order to make it easier for the prospective users to select the equipment suitable for the job at hand. The report explains the problem associated with contaminated sediment dredging and presents the findings of the market survey. The scope of this project includes considerations of monitoring during dredging operations involving removal of contaminated sediments, however, there were no opportunities to participate in any field operation; hence, this component of the study is not covered under the present report.

An inseparable part of dredging operation consists of disposal of dredged material without or with treatment. The type of dredging equipment selected at any site would also depend, among other factors, on the method of treatment, if any, and disposal of the dredged material. Innovative technologies are being developed for treatment and placement of contaminated sediments. This aspect, however, is outside the scope of the present study and the report essentially deals with the aspect of only the removal of contaminated sediment from shallow water areas.

## 2 Background

---

Contaminated sediments are likely to be found predominantly in inland water bodies such as rivers, estuaries, lakes, ponds and man-made reservoirs which receive organic and / or inorganic nutrients and pollutants from the human habitats in the vicinity. The contaminants may be in the form of heavy metal derivatives, complex organic compounds, bacteria and micro-organisms or radio-active substances which may have reached the water body through agricultural practices, sewage outfalls, industrial effluents, surface runoff, or ground water seepage. Occurrence of contaminated sediment in water is a relatively recent phenomenon subsequent to the industrial revolution. Rapid industrialization and urbanization occurred during the past century on the banks of major water bodies which were exploited for various human needs. In the absence of regulations on the quality of industrial or sewage effluent, these discharges were released indiscriminately into the same or adjacent water bodies with partial or no treatment. Hence the deposits of contaminated sediments are mostly confined to the uppermost, relatively thin layer at the sediment-water interface. Contaminated sediment dredging essentially consists of removing this thin muddy layer from the bed surface. The depth of accumulation of such contaminated sediments varies from a few centimeters to several meters. Dredging of the bottom sediments may be necessary either for initial cutting, deepening or maintenance of navigational channels and harbors, or it may be necessary for removing contaminated sediments with an objective of reducing health hazards to the nearby communities.

## 3 The Problem

---

Most natural water bodies have sediment beds consisting of a relatively wide range of particle sizes such as, for example, a mixture of clays and sand, i. e. a mixture of very fine, cohesive sediments and coarse, non-cohesive sediments. Due to the electro-chemical properties and availability of extremely large surface area of fine sediments particles, the pollutants are mostly found to be adsorbed to that component of sediments which consists of fine sediments, namely, clays and fine silt. Coarse sediments such as sand and gravel are mostly free from any contaminants and hence they do not pose significant problems in their removal and disposal.

Three major problems are associated with dredging the fine sediments that are contaminated. The first is related to the physical properties. The fine sediments are cohesive and they form aggregates while settling through the water column. The aggregates collapse on the bed and the self-weight consolidation results in sediment layers which have a high bulk shear strength. It is quite difficult to remove such sediment economically in large quantities by using suction dredging techniques alone. Devices such as cutters, augers, clam shell and water jets are needed for loosening and dislodging the stiff material from the bed which can then be removed from the site by other means. The second problem concerns the ease with which the fine sediment can be resuspended. Although the bulk shear strength of consolidated cohesive sediments is high, the uppermost unconsolidated or partially consolidated layer has a very low shear strength and can be eroded very easily with any low-energy disturbance. Erosion of a few-millimeter-thick top layer increases the suspension concentration of the upper water column by several milligrams per liter. The fine material in its dispersed state gets distributed over the vertical due to turbulence and the dispersed sediment may remain in suspension in the water column for a long period of time. Even a weak ambient current may transport suspended fine sediment over great distances to other areas far away from the dredging site. This phenomenon, therefore, can have profound environmental consequences in rivers and estuaries with flowing water. On the other hand, the dredging requirement may consist of removing bottom sediment from a small, isolated pond with stagnant water. The factor of greater concern could be to find suitable equipment which can pump highly viscous bottom material, which is the third problem encountered in dredging. The aspect of keeping resuspension to a minimum may be less critical in this case.

A concise review of the conventional methods and equipment used for dredging and dredged material disposal is given in Engineer Manual 1110-2-5025 of March 1983. These have been successfully used over the last several decades for removing several millions of cubic yards of sediment from water bodies. However, in order to effectively handle the contaminated sediments without causing adverse environmental impact, resuspension of bed sediment in any large quantity needs to be avoided while dredging in rivers and estuaries. Dredging activity results in resuspension of at least some of the bed material in the water column. Resuspension characteristics of selected dredges have already been examined, the results of which are available in U. S. Army Engineer ETL-1110-2-531 of November 1984. Spreading of contaminants during dredging can be minimized through the use of specialized techniques which are being developed with the prime objective of minimizing resuspension of bed material during dredging operations.

## 4 General Comments

---

High energy environments such as beaches and near-shore areas often do not contain deposits of contaminated sediments because the fine sediment gets washed away and the coarse sediments do not readily adsorb pollutants. Hence the need for ocean-going dredges for removal of contaminated sediments is somewhat uncommon. To determine when dredged material is contaminated enough to require special management, either in upland or island containment areas or by capping, Corps of Engineers (COE) generally relies on a series of screening tests. Based on these tests in the year 1987, COE considered about 3 percent (approximately 7 million wet metric tons) of all material dredged in its coastal climates to be highly contaminated and to require special management. It was also estimated that about 30 percent of all maintenance dredging material might be contaminated to some degree. This estimate will change with a revised definition of the degree of contamination, however, the order of magnitude is not expected to change substantially. Due to both these reasons, namely, small volume of dredging and relatively sheltered dredging sites, the specialized dredges available in the market are small in terms of size and production rates, and they are suitable for operation in shallow water in protected, confined environment. Some are designed to be portable by road transport.

Among mechanical devices, the clamshell is effective in removing consolidated fine sediments, provided that the sediment does not contain larger size material which can prevent the bucket from closing completely. The dipper dredge and backhoe dredge are unsuitable for removing fine sediments because a substantial quantity of material may be washed during hoisting the bucket through water column. Among hydraulic dredges, the plain suction dredge is useful mainly for removing sand and sometimes mud with a very low compaction. A cutter suction dredge is effective and efficient in removing consolidated muds. Hopper dredges are most efficient for removing and transporting loose, non-cohesive sediments. Several specialized devices have been designed and manufactured for contaminated sediment dredging. Such devices include the Matchbox Draghead, Clean-up Draghead, Refresher Dredge, Dustpan Dredge, Disc-bottom Dredge, Pneumatic Dredge and Watertight Buckets. A detailed review is given in the WES Misc. Paper EL-91-20 entitled 'Innovative Technologies For Dredging Contaminated Sediments'.

## 5 Equipment Survey

---

The problem of dredging contaminated sediments has also engaged the attention of several agencies in countries other than the USA. However, according to the present regulations, dredging work in USA can be carried out only by indigenously manufactured dredges. Special dredging equipment, although available in other countries, cannot be readily employed for dredging operations in USA. Hence the equipment survey is limited mainly to the U. S. market. Only a brief mention of the successful techniques developed abroad is included under the present report.

The earlier WES survey report dated March 1983 was based upon inquiries sent to 29 companies. A literature and market search undertaken under the present study identified 42 additional domestic companies, thus creating a data base for a total of 71 companies. A list of these 71 companies is given in Appendix A.

Preliminary inquiries revealed that 13 companies from the earlier list had closed down. Inquiry letters were therefore mailed to 57 companies and periodic follow-up was done over telephone. Seven letters were returned by the Post Office although their addresses were obtained from published literature. Three companies had acquired a new name / address. Hence letters were sent to them again. A list of 64 companies which was used for the present information processing exercise is given in Appendix B. The letter addressed to the companies is given in Appendix C.

Out of the total of 64 companies that received the inquiry letters, 32 responded with letters, brochures, phone calls and/or FAX messages. A list of these companies is given in Appendix D and the type of information from them is listed in Appendix E.

It was experienced that, in general, the companies are not readily willing to share any technical or other information to a Government agency such as WES, probably due to the fear of its possible use or misuse by other Government agencies such as EPA in giving adverse remarks on its use without knowing full details. The information could also be misused by the competitors of respective industries. Besides, the companies fail to see a possible direct financial or any other tangible benefits to their company by making this

information available to WES, which is not the end user of the equipment. Companies showed absolutely no interest in allowing WES representatives during the field operation of their equipment for obvious fears that they will probably note many or all the adverse features and make negative publicity which might have a damaging impact not only to the reputation of the company but may also result in heavy financial losses in the future. These are serious issues and must be kept in mind in appreciating whatever information that has been obtained and compiled in this report.

# 6 Promising Equipment

---

The parameters determining the preference and suitability of equipment for contaminated sediment dredging are the following:

- a.* Small size and low operating draft
- b.* Low weight and portability by road
- c.* Minimum water content and maximum sediment content in discharge pipe
- d.* Acceptable and economical production rate
- e.* Minimum resuspension of bed sediment during dredging
- f.* Low initial and operating cost
- g.* Adaptability for varying types of bed sediment
- h.* Alternative uses during idle time
- i.* Availability

All of the above requirements may not be satisfied by any single dredger and some compromise may be needed depending on site requirements. After examining information received from each of the vendors, it was noted that equipment offered by seven companies was promising based on the details provided by them. A list of these companies is given in Appendix F. Although not complete in respect to each parameter, the information as received from the vendors is summarized below in no particular order. For further details see Appendix G.

## **Keene Engineering Company, Northridge, CA**

The company has offered their portable Model 8DX reclamation dredge NESSIE. Out of several cutter heads available, the company has stated that the Bucket Wheel Cutterhead lifts and cuts sediment extremely fast with a minimum of turbidity. It is also claimed that turbidity screens are normally not required with this type of cutterhead. The details of Model 8DX are given below:

|  |                              |               |
|--|------------------------------|---------------|
| Length: 19 ft 1 in.                                | Width: 7 ft 2 in.            | Draft: 16 in. |
| Weight: 14,500 lb.                                 | Operating Depth: 21 ft 9 in. |               |
| Suction and Delivery Pipe Diameters: 8 in. x 8 in. |                              |               |
| Production Rate: 200 cubic yards per hour.         |                              |               |

## **Aquatics Unlimited, Martinez, CA**

The company has offered portable dredges under their series AQUAMOG. It is stated by the company that these are shallow draft multi-purpose vessels that perform functions from debris / oil cleanup to bucket / suction dredging to emergent / submerged aquatic plant control using interchangeable attachments. The machines are available with cutter heads and / or augers depending upon the type of materials to be dredged and job-specific requirements. The company has stated that the system minimizes turbidity on account of the shrouded auger and the high suction available. The details of Model PRX 163 are given below:

|   |                        |               |
|---|------------------------|---------------|
| Length: 30 ft 6 in.                                       | Width: 10 ft           | Draft: 18 in. |
| Weight: 18,500 lb.  | Operating Depth: 20 ft |               |
| Suction and Delivery Pipe Diameters: 6 in. x 6 in.        |                        |               |
| Production Rate: 60 cubic yards per hour with 6 inch pipe |                        |               |

## **Ellicott Machine Corporation, Baltimore, MD**

The company has offered their MUDCAT, which is designed as a portable hydraulic dredge mounted on pontoons. A horizontal auger feeds slurry to the suction intake of a centrifugal pump. The dredge is propelled along an anchored cable and the dredged material may be discharged through a floating pipeline. It can operate in water depth ranging from 1.5 ft to 20 ft. The

company has stated that low rate of resuspension can be achieved by adjusting the rotation speed of auger, depth of cut and the suction rate. Further, the auger can also be shielded for reducing turbidity. The details of their Model SP-815 are given below:

|  |                        |               |
|--|------------------------|---------------|
| Length: 31 ft 1 in.                                | Width: 8 ft            | Draft: 22 in. |
| Weight: 13,200 lb.                                 | Operating Depth: 15 ft |               |
| Suction and Delivery Pipe Diameters: 6 in. x 6 in. |                        |               |
| Production Rate: 50 cubic yards per hour.          |                        |               |

## **Dredgemasters International, Hendersonville, TN**

The company have stated that their standard model units, which are portable, hydraulic cutter suction dredgers, have been used in the past for contaminated sediment dredging. The standard production units are available in 8, 10, 12, 14, and 16 inch size. The standard units can also be modified for a specific purpose. However, no details of the proposed modifications are given by the company. Details of Model HPC-8EC, which is one of their several standard models, are given below:

|   |                                  |                 |
|---|----------------------------------|-----------------|
| Length: 36 ft                                       | Width: 10 ft                     | Draft: Variable |
| Weight: Custom designed                             | Operating Depth: Custom designed |                 |
| Suction and Delivery Pipe Diameters: 10 in. x 8 in. |                                  |                 |
| Production Rate: cubic yards per hour.              |                                  |                 |

## **Dredging Supply Company, Harvey, LA**

The company has stated that they are presently designing a bucket dredge with a pump-off system for a large superfund project. No further details are given by the company. The dredges are available either on lease or on sale and the standard models can be modified to meet specific requirements. The company has also developed a Bio-remediation process in which microscopic organisms are used to digest contaminated sediments and produce waste products that are less hazardous and toxic than the original sediments. Out of the three standard portable models, namely, Piranha, Barracuda and Shark, details of the Barracuda 8 inch size cutterhead dredge with swinging ladder are given below:

|  |                              |                  |
|--|------------------------------|------------------|
| Length: 54 ft 9 in.                                | Width: 17 ft 8 in.           | Draft: 3 to 4 ft |
| Weight: 50,000 lb.                                 | Operating Depth: 13 ft 6 in. |                  |
| Suction and Delivery Pipe Diameters: 8 in. x 8 in. |                              |                  |
| Production Rate: Variable                          |                              |                  |

## **Innovative Material Systems, Olathe, KS**

The company has stated that they have designed dredge pumps especially for pumping exceptionally thick, viscous materials and for minimizing turbidity in the surrounding waters. The system has been used in Florida and Michigan. The company has stated that they have a hydraulic submersible pump called VERSI-DREDGE, which has a shrouded cutterhead and hence it is particularly suited for contaminated sediment dredging. Details of the Model 4010 are given below:

|  |                        |               |
|--|------------------------|---------------|
| Length: 30 ft 2 in.                                  | Width: 9 ft 4 in.      | Draft: 20 in. |
| Weight: 12,000 lb.                                   | Operating Depth: 20 ft |               |
| Suction and Delivery Pipe Diameters: 10 in. x 10 in. |                        |               |
| Production Rate: Variable                            |                        |               |

It may be noted that field operation of each of the models described above will have to be monitored carefully before endorsing their suitability for contaminated sediment dredging.

## **Oceaneering International, Inc., Upper Marlboro, MD**

The company has not yet marketed the product which is pending for a patent. They are currently developing an underwater excavation device that is specifically designed for contaminated sediment retrieval. The Total Contaminant Clamshell Dredge (TCCD) is designed to precision dredge "hot" zones while minimizing all possibilities of spreading the contamination. Two primary objectives were set during the TCCD design. The first objective was that disturbed sediments would not be able to escape the system. The second was that the volume of associated water be kept to an absolute minimum.

Total containment is accomplished by incorporating a hyperbaric soil receiving chamber. This is an air-void that provides space for the incoming sediments. This void eliminates the displacement of an equal volume of contaminated water. It also minimizes the volume of associated water captured with each "bite" of sediment. Leakage containment is assured by operating in a negative pressure differential mode. Essentially, the pressure within the system is adjusted to be less than ambient water pressure during system operation. This results in leakage into the apparatus rather than outward.

Total containment is further assured by active silt curtains. Hard curtains that seal the sides of the clamshell buckets are lowered to close off the gap between them during closure. This prevents disturbed soil from extruding out of the system.

A working prototype of the TCCD is currently in factory testing with operational field testing scheduled in the early spring of 1996. The TCCD will be produced in three sizes to accommodate a variety of applications. A second TCCD is designed to use a vessel of opportunity as a floating base which provides the flexibility to bid projects in any market area.

## 7 Overseas Development

---

Although the objective of present data collection effort was to concentrate on domestic market, letters were also mailed to 21 overseas companies in order to explore the stage of development and availability of suitable equipment in foreign market. Response was received from 3 companies, out of which 1 appears promising. Ham Company, Rotterdam, The Netherlands, have offered an Auger dredger in which the auger is fitted as T head to the dredger's suction pipe. A flexible skirt is provided around the draghead and the dredging is carried out within the area enclosed by the skirt. The second device offered by this company is a visor dredging grab. Inside the regular grab, there is a revolving visor flap closed by means of two hydraulic cylinders. After the grab is filled, the visor is closed before raising the grab. A rubber strip along the edge of the visor ensures a watertight closure. Both these devices are claimed to be effective in contaminated sediment dredging.

Information on the past and recent developments in The Netherlands, Japan and Canada was obtained through literature search, the salient details of which are given below:

Volker Stevin Dredging Company, The Netherlands, have developed a hydraulic suction type matchbox dredge which consists of a draghead with funnel intake provided with valves and a triangular cover. This was used successfully in 1981-1983 in the First Petroleum Harbor, The Netherlands, for dredging polluted sediment containing pesticides and chlorinated hydrocarbons. The suspended solids at a distance of 2 to 5 m from the suction head during dredging were about 12 mg/l near the water surface and 12 to 80 mg/l at 7 to 11 m depth below the surface. These were only marginally higher over the background concentrations in the area.

TOA Harbor Works, Tokyo, Japan, have developed Clean-up dredges for removing contaminated sediments which has been used at 45 projects as of the end of 1981. This device consists of a rectangular cover fitted over an auger cutter and a centrifugal pump for suction. A sonar device monitors the elevation of the draghead and ensures its horizontal position.

Environment Canada have published a brief report in March 1993 entitled 'Selecting and Operating Dredging Equipment: A Guide to Sound

Environmental Practices'. In addition to giving a limited description of the specialized dredging equipment, the report covers important phases of any dredging project, namely, planning, designing, drafting technical specifications and environmental monitoring.

## 8 Additional Information

---

Additional information may be obtained from Dr. T. M. Parchure, Research Hydraulic Engineer, (Tel: 601-634-3213), or Mr. W. H. McAnally, Chief, Waterways and Estuaries Division, (Tel: 601-634-3822), Hydraulics Laboratory, U. S. Army Corps of Engineer Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, MS, 39180.

# Bibliography

---

Clark G. R. (1983). "Survey of Portable Hydraulic Dredges", Technical Report HL-83-4, U. S. Army Engineers, Waterways Experiment Station, Vicksburg, MS.

\_\_\_\_\_(1983). "Dredging and Dredged Material Disposal". Engineer Manual EM-1110-2-5025, Corps of Engineers, Department of the Army, Office of the Chief of Engineers, Washington, DC.

\_\_\_\_\_(1984). "Sediment Resuspension Characteristics of Selected Dredges", ETL-1110-2-531, Department of the Army, Corps of Engineers, Office of the Chief of Engineers, Washington, DC.

\_\_\_\_\_(1987). "Wastes in Marine Environments", OTA-O-334, U. S. Congress, Office of Technology Assessment, U. S. Govt. Printing Office, Washington D. C., April 1987.

Zappi P. A., and D. F. Hayes. (1991). "Innovative Technologies For Dredging Contaminated Sediments", U. S. Army Engineers, Waterways Experiment Station, Miscellaneous Paper EL-91-20, September 1991.

Jacques Berube Inc. (1993). "Selecting and Operating Dredging Equipment: A Guide to Sound Environmental Practices", St. Lawrence Centre, Document prepared in collaboration with Public Works Canada and the ministere de l'Environnement du Quebec, Cat. No. En 40-438/1993E, 75 pp.

# **Appendix A**

## **Lists of Companies Contacted**

---

## Lists of Companies Contacted in 1983 and New Additions (29 + 42 = 71 Companies)

**Notes:** 1 Several companies closed down or changed their address. Details of these are given  
2. Companies to whom letters were sent are shown by # followed by serial number.  
3. Companies to whom letters were not sent are printed in *Italics*, starting with \*\*\*\*.  
Their correct addresses were searched and are given next, wherever applicable.  
Letters were sent on the correct address.

### **Companies Contacted in 1983 (29 Companies)**

|   |  |
|---|--|
| #1. 1. Ajax Company<br>1284 Miller Road<br>Avon, OH, 44011  | Tel: 216 - 934 - 4442  |
| 2. **** AMMCO<br>P.O.Box 100923<br>Nashville, TN, 37210   | Tel: 615 - 641 - 7533  |
| #2. 2. American Marine & Machinery Co., Inc.<br>(AAMCO)<br>178 Center Point Road South<br>Hendersonville, TN, 37075 | Tel: 615 - 824 - 9699<br>FAX: 615 - 822 - 0002                         |
| 3. **** Assemblers, Inc.<br>1115 North Elm Street<br>West Liberty, LA 52776   | No Phone listed<br>319 -   |
| 4. **** Clyde Iron / Wiley Mfg.<br>2300 West Loop South<br>Suite 102<br>Houston, TX 77027                           | No Phone listed<br>713 -   |
| 5. **** Delta Dredge and Pump Corp.<br>11743 Lackland Road<br>St. Louis, Missouri 63141                             | Incorrect Address<br>Tel: 314 - 968 - 4433                             |
| #3. 5. Delta Dredge and Pump Corp.<br>344 Gray Avenue<br>St. Louis, Missouri, 63119-3608                            | Tel: 314 - 968 - 4433<br>FAX: 314 - 968 - 9635                         |
| 6. **** Dixie Dredge Corporation<br>8222 Polk Street<br>St. Louis, Missouri 63111                                   | Incorrect Address<br>No Phone listed (314-<br>See #57 for new address) |

7. \*\*\*\* *Dravo Corporation*  
4800 Neville Island  
Pittsburg, PA, 15225

*Incorrect Address*  
Tel: 412 - 771 - 1200

#4. 7. *Dravo Corporation*  
Engineering Works Division  
1800 Neville Island  
Pittsburg, PA 15225

Tel: 412 - 566 - 3000

8. *Dredge Economy Inc.*  
12700 Biscane Blvd.  
North Miami, FL 33181 305 -

No Phone listed

9. \*\*\*\* *Dredgemasters International Inc.* *Incorrect Address*  
Number One Dredge Park  
Hendersonville, TN 37075

Tel: 615 - 822 - 3500

#5. 9. *Dredgemasters International*  
200 Center Point Road South  
Hendersonville, TN, 37075 - 2060

Tel: 615 - 822 - 3500  
FAX: 615 - 822 - 0002

10. \*\*\*\* *Eagle Iron Works*  
129 Holcomb  
Des Moines, Iowa 50304

*Incorrect Address*  
Tel: 515 - 243 - 1123

#6. 10. *Eagle Iron Works*  
127 Holcomb  
Des Moines, Iowa, 50313

Tel: 515 - 243 - 1123  
FAX: 515 - 243 - 8214

#7. 11. *Ellicott Machine Corp.*  
1611 Bush Street  
Baltimore, MD 21230 - 7900

Tel: 410 - 837 - 7900  
FAX: 410 - 752 - 3294

Attn: Mr. Edward H. Bond  
General Manager  
MUD CAT Division  
National Car Rental  
P.O. Box 16247  
St. Louis Park, MN 55416

Tel: 612 - 542 - 8332

12. \*\*\*\* *Guntiert and Zimmerman*  
Construction Division, Inc.  
P.O. Box 1688  
Stockton, CA 95201

No Phone listed  
209 -

#8. 13. Hardcastle Industries Inc.  
229 N. Meridian Ave. Tel: 813 - 878 - 2288  
Tampa, FL 33602

#9. 14. Hartman Fabco Inc.  
1415 Lake Lansing Road Tel: 517 - 485 - 9493  
Lansing, MI 48912

#10. 15. Intercontinental Engineering  
Manufacturing Corp. Tel: 816 - 741 - 0700  
P.O.Box 9055 800 - 821 - 3182  
Kansas City, Missouri, 64168 FAX: 816 - 741 - 5232

#11. 16. Jantzen Engineering Co. Inc.  
6655 Amberton Drive Tel: 410 - 796 - 8585  
Baltimore, MD 21227

#12. 17. Kenner Marine and Machinery Inc. Closed down in 1990  
P.O.Box 1200 Tel: 504 - 652 - 2548  
Laplace, LA 70068 See # 23 for New Business

18. *Levingston Shipbuilding Co.*  
*Second and Front Streets* No Phone listed  
*Orange, TX 77630* 409 -

#13. 19. Maxon Marine Industries Inc.  
P.O.Box 349 Tel: 812 - 547 - 2341  
Tell City, IN 47586

20.\*\*\*\* *Meckum Engineering Division*  
*The Peltier Glass Company* No Phone listed  
*2027 Champlain St.* 309 -  
*Ottawa, IL 61350*

#14. 21. Minco Inc  
P.O.Box 553 Tel: 504 - 581 - 3855  
Westwego, LA 70094

22.\*\*\*\* *Mini Dredge Co. Ltd.* No Phone listed  
*1422 Crown Street* 604 -  
*North Vancouver, BC, V7J 1G5*  
*Canada*

23.\*\*\*\* *Paulson Engineering Inc.*  
188 Eighth Avenue  
Hawthorne, NJ 07507

*No Phone listed*  
201 -

#15. 24. *Quality Industries Inc.*  
P.O.Box 406  
1920 Canal Blvd.  
Thibodaux, LA 70301-5214

Tel: 504 - 447 - 4021  
FAX: 504 - 447 - 4028

25.\*\*\*\* *Sefab Inc.*  
78 S. Hudson Street  
Seattle, WA 98134

*No Phone listed*  
206 -

26.\*\*\*\* *Todd Shipyards Inc.*  
P.O.Box 9666  
Houston, TX 77015

*No Phone listed*  
713 -

27.\*\*\*\* *Twin City Shipyard Inc.*  
P.O.Box 43032  
St. Paul, MN 55164

*No Phone listed*  
612 -

28.\*\*\*\* *VMI Inc.*  
4310 N. Martin  
Bethany, OK 73008

*No Phone listed*  
405 -

#16. 29. *W & S Development Inc.*  
4957 Main Street  
Greenbush, MI 48738

Tel: 517 - 724 - 5463

**Additional Domestic Companies Located During Present Survey  
(42 Companies)**

#17. *H & H Pump and Dredge Co.*  
520 Highway 322  
Clarksdale MS 38614  
Attn: Mr. Howard Stovall

Tel: 601 - 627 - 9631

#18. *Keene Engineering Co.*  
9330 Corbin Avenue  
Northridge California, 91324

"Nessie" Portable Cutterhead Dredger  
Tel: 818 - 993 - 0411  
FAX: 818 - 993 - 0447

#19. *Aquatics Unlimited*  
2150 Franklin Canyon Road  
Martinez, California 94553

"Aquamog"  
Tel: 415 - 370 - 9175  
FAX: 415 - 370 - 9179

#20. SeaArk Marine Inc.  
P.O.Box 210  
Monticello, Arkansas, 71655      Custom-designed Dredgers  
Tel: 501 - 367 - 9755  
FAX: 501 - 367 - 2120

#21. Great Lakes Dredge & Dock Co.  
2122 York Road  
Oak Brook, Illinois, 60521      Tel: 708 574 3000  
FAX: 708 574 2980

#22. \*\*\*\* *Gulf Coast Trailing Co.*  
*P.O.Box 10*  
*Kenner, LA 70063*      *Incorrect Address*  
*Tel: 504 - 468 - 3608*

Gulf Coast Trailing Co.  
P.O.Box 20116      Tel: 504 - 461 - 9230  
New Orleans, LA, 70141  
Atten: Mr. Steve Chatry

#23. Dredging Supply Co., Inc.  
701 Peters Road      Tel: 504 - 367 - 2314  
Harvey, LA, 70058      FAX: 504 - 368 - 8359

#24. American Marine Inc.  
P.O.Box 940      Tel: 305 - 636 - 5783  
401 Shearer Blvd.  
Cocoa, FL, 32923

#25. B & B Boatbuilding Inc.  
Strar Route Box 3      Tel: 512 - 831 - 3122  
Brownsville, TX, 78520      FAX: 512 - 831 - 2745

#26. Barney & Dickenson Inc.  
610 Prentice Road      Tel: 607 - 729 - 1536  
Vestal, NY, 13850      FAX: 607 - 797 - 3931

#27. Bay Machinery Corp.  
543 South 8 th Street      Tel: 415 - 236 - 9000  
Richmond, CA, 94804      FAX: 415 - 236 - 7212

#28. Best Equipment Technologies  
P.O.Box 429, Hwy 53 South      Tel: 601 - 795 - 2208  
Poplarville, MS, 39470

#29. Cargile Co. Incorrect Address  
1201 S. Flagler Dr. B-4 Tel: 407 - 833 - 9878  
W. Palm Beach, FL, 33401  
OR  
American Mining and Machinery Corp. Tel: 407 - 820 - 0049  
3000 S. Washington Road FAX: 407 - 820 - 0049  
West Palm Beach, FL, 33405  
OR  
Envirotech Corporation (See # 35)

#30. Consolidated Placer Dredging Co. Tel: 714 - 474 - 1120  
17951 Sky Park Circle, Suite C FAX: 714 - 863 - 9261  
Irvine, CA, 92714

#31. Crisafulli Pump Co. Tel: 406 - 365 - 3393  
P.O.Box 1051 FAX: 406 - 365 - 8088  
Crisafulli Dr.  
Glendive, Montana, 59330

#32. Dredging Specialists Tel: 217 - 234 - 3344  
43 Dewitt Avenue FAX: 217 - 234 - 3347  
Mattoon, IL, 61938

#33. *\*\*\*\*Dredge Technology Corp.* Returned by P.O.  
*Atlantic Stewardship Bank Buld.*  
*630 Godwin Avenue, Suite 201* Tel: 201 - 444 - 0581  
*Midland park, New Jersey, 07432-1405*

Dredge Technology Corp. Tel: 201-696-1559  
P.O.Box 1520 FAX: 201-696-3572  
Wayne, NJ

#34. Envirotech Tel: 407 - 684 - 4774  
1700 Embassy Drive-712 FAX: 407 - 684 - 4664  
W. Palm Beach, FL, 33401

#35. Greenville Manufacturing Works Tel: 513 - 548 - 6100  
600 Pine Street  
Greenville, OH, 45331

#36. Harnischfeger Corp. Tel: 414 - 671 - 4400  
P.O.Box 554  
Milwaukee, WI, 53201

#37. Hendry Corp.  
5107 S. Westshore Blvd.  
Tampa, FL, 33681  
Tel: 813 - 831 - 1211

#38. Hitachi Construction Machinery  
611 Lockhaven Drive  
Houston, TX, 77073-5599  
Tel: 713 - 821 - 2400

#39. Humphreys Mineral Industries  
2219 Market Street  
Denver, CO, 80205  
Tel: 303 - 296 - 8000

#40. Innovative Material Systems Inc.  
15630 South Keeler  
Olathe, Kansas, 66062  
Tel: 913 - 829 - 2900  
FAX: 913-829-2989

#41. Kahl Scientific Instrument Corp.  
P.O.Box 1166  
737 W. Main Street  
El Cajon, CA, 92022  
Tel: 619 - 444 - 2158  
1-800 - 800 - 4010

#42. Land and Sea Diesel Co.  
P.O.Box 151  
East Falmouth, MA, 02536  
Tel: 617 - 540 - 5350

#43. McDermott Inc.  
1010 Common Stret  
New Orleans, LA, 70160  
Tel: 504 - 587 - 4441

#44. Nippon Kokan K K  
450 Park Avenue  
New York, NY, 10022  
Tel: 212 - 826 - 6250

#45. Oenstein & Koppel  
700 Route 46  
Clifton, NJ, 07015  
Tel: 201 - 478 - 8900

#46. R.A. Hanson Co. Inc.  
P.O.Box 7400  
Spokane, WA, 99207  
Tel: 509 - 467 - 0770  
FAX: 509 - 466 - 0212

#47. ROHR Corp.  
P.O.Box 30-J  
Cincinnati, OH, 45230  
Tel: 513 - 624 - 9220  
FAX: 513 - 624 - 922

#48. Smalley Excavators  
71 Hartford Turnpike South  
Wallingford, Connecticut, 06492      Tel: 203 - 265 - 9352

#49. Spectrum Enterprises Inc.  
178 Center Point Road-South  
Hendersonville, TN, 37075-2060      Tel: 615 - 824 - 9699  
FAX: 615 - 822 - 0002

#50. Tacoma Boatbuilding Co., Inc.  
1840 Marine View Drive  
Tacoma, WA, 98422      Tel: 206 - 572 - 3600

#51. Twinkle Co.  
P.O.Box 79  
West Liberty, Iowa, 52776      Tel: 319 - 627 - 6655  
FAX: 319 - 627 - 4444

#52. United Marine International Inc.  
1436 W. River Road  
P.O.Box 750  
Waterloo, NY, 13165      Tel: 315 - 539 - 5665  
FAX: 315 - 539 - 5667

#53. *\*\*\*\*Assemblers, Inc.*  
*P.O.Box 508*  
*Pleasant Valley, Iowa, 52767*      Tel: 319 - 332 - 5600  
FAX: 319 - 332 - 10089

Assemblers Inc.  
2355 Yankee Avenue  
Durant IA 52747      Tel: 319-785-6539

#54. Sludge Engineering  
43 Dewitt Avenue  
Mattoon, Illinois, 61938      Tel: 217 - 234 - 3344  
FAX: 217 - 234 - 3347

#55. Allis Mineral Systems  
4800 Grand Avenue  
Pittsburg, PA, 15225-1599      Tel: 412 - 269 - 5000  
FAX: 412 - 269 - 5050

#56. T.L.James & Co. Inc.  
P.O.Box 826  
Kenner, LA, 70063      Tel: 504 - 467 - 6000  
FAX: 504 - 469 - 1332

#57. Dixie Dredge Co.  
No. 1, Dredge Park  
190 Center Point Road, South  
Hendersonville, TN, 37075      Tel: 615 - 822 - 3901  
FAX: 615 - 822 - 0002

|      |  |  |
|------|--|--|
| #58  | Dredgemasters International<br>200 Center Point Road South<br>Hendersonville, TN, 37075 - 2060 | Tel: 615 - 822 - 3500<br>FAX: 615 - 822 - 0002   |
| #59  | Ellicott Machine Corp.<br>1611 Bush Street<br>Baltimore, MD 21230 - 7900                       | Tel: 410 - 837 - 7900<br>FAX: 410 - 752 - 3294   |
| #60  | Keene Engineering Co.<br>9330 Corbin Avenue<br>Northridge California, 91324                    | "Nessie" Portable Cutterhead Dredger<br>Tel: 818 - 993 - 0411<br>FAX: 818 - 993 - 0447 |
| #61  | Aquatics Unlimited<br>2150 Franklin Canyon Road<br>Martinez, California 94553                  | "Aquamog"<br>Tel: 415 - 370 - 9175<br>FAX: 415 - 370 - 9179                            |
| #62  | Dredging Supply Co., Inc.<br>701 Peters Road<br>Harvey, LA, 70058                              | Tel: 504 - 367 - 2314<br>FAX: 504 - 368 - 8359   |
| #63. | Innovative Material Systems Inc.<br>15630 South Keeler<br>Olathe, Kansas, 66062                | Tel: 913 - 829 - 2900<br>FAX: 913-829-2989   |
| #64  | Oceaneering Technologies<br>501 Prince George's Blvd<br>Upper Marlboro, MD, 20772              | Tel: 301 - 249 - 3300<br>FAX: 301 - 249 - 4022   |

# **Appendix B**

## **List of Companies Used for**

## **Present Information Processing**

---

## **List of Companies Used For Present Information Processing (64 Companies)**

|  |  |
|--|--|
| #1. Ajax Company<br>1284 Miller Road<br>Avon, OH, 44011  | Tel: 216 - 934 - 4442                          |
| #2. American Marine & Machinery Co., Inc.<br>(AAMCO)<br>178 Center Point Road South<br>Hendersonville, TN, 37075 | Tel: 615 - 824 - 9699<br>FAX: 615 - 822 - 0002 |
| #3. Delta Dredge and Pump Corp.<br>344 Gray Avenue<br>St. Louis, Missouri, 63119-3608                            | Tel: 314 - 968 - 4433<br>FAX: 314 - 968 - 9635 |
| #4. Dravo Corporation<br>Engineering Works Division<br>1800 Neville Island<br>Pittsburg, PA 15225                | Tel: 412 - 566 - 3000                          |
| #5. Dredgemasters International<br>200 Center Point Road South<br>Hendersonville, TN, 37075 - 2060               | Tel: 615 - 822 - 3500<br>FAX: 615 - 822 - 0002 |
| #6. Eagle Iron Works<br>127 Holcomb<br>Des Moines, Iowa, 50313   | Tel: 515 - 243 - 1123<br>FAX: 515 - 243 - 8214 |
| #7. Ellicott Machine Corp.<br>1611 Bush Street<br>Baltimore, MD 21230 - 7900                                     | Tel: 410 - 837 - 7900<br>FAX: 410 - 752 - 3294 |
| #8. Hardcastle Industries Inc.<br>229 N. Meridian Ave.<br>Tampa, FL 33602  | Tel: 813 - 878 - 2288                          |
| #9. Hartman Fabco Inc.<br>1415 Lake Lansing Road<br>Lansing, MI 48912  | Tel: 517 - 485 - 9493                          |

|  |  |
|--|--|
| #10. Intercontinental Engineering<br>Manufacturing Corp.<br>P.O.Box 9055<br>Kansas City, Missouri, 64168 | Tel: 816 - 741 - 0700<br>800 - 821 - 3182<br>FAX: 816 - 741 - 5232                     |
| #11. Jantzen Engineering Co. Inc.<br>6655 Amberton Drive<br>Baltimore, MD 21227                          | Tel: 410 - 796 - 8585  |
| #12. Kenner Marine and Machinery Inc.<br>P.O.Box 1200<br>Laplace, LA 70068                               | Closed down in 1990<br>Tel: 504 - 652 - 2548<br>See #23 for New Business               |
| #13. Maxon Marine Industries Inc.<br>P.O.Box 349<br>Tell City, IN 47586                                  | Tel: 812 - 547 - 2341  |
| #14. Minco Inc<br>P.O.Box 553<br>Westwego, LA 70094  | Tel: 504 - 581 - 3855  |
| #15. Quality Industries Inc<br>P.O.Box 406<br>1920 Canal Blvd.<br>Thibodaux, LA 70301-5214               | Tel: 504 - 447 - 4021<br>FAX: 504 - 447 - 4028   |
| #16. W & S Development Inc.<br>4957 Main Street<br>Greenbush, MI 48738                                   | Tel: 517 - 724 - 5463  |
| #17. H & H Pump and Dredge Co.<br>520 Highway 322<br>Clarksdale MS 38614<br>Attn: Mr. Howard Stovall     | Tel: 601 - 627 - 9631  |
| #18. Keene Engineering Co.<br>9330 Corbin Avenue<br>Northridge California, 91324                         | "Nessie" Portable Cutterhead Dredger<br>Tel: 818 - 993 - 0411<br>FAX: 818 - 993 - 0447 |
| #19. Aquatics Unlimited<br>2150 Franklin Canyon Road<br>Martinez, California 94553                       | "Aquamog"<br>Tel: 415 - 370 - 9175<br>FAX: 415 - 370 - 9179                            |

#20. SeaArk Marine Inc.  
P.O.Box 210  
Monticello, Arkansas, 71655      Custom-designed Dredgers  
Tel: 501 - 367 - 9755  
FAX: 501 - 367 - 2120

#21. Great Lakes Dredge & Dock Co.  
2122 York Road  
Oak Brook, Illinois, 60521      Tel: 708 574 3000  
FAX: 708 574 2980

#22. \*\*\*\* *Gulf Coast Trailing Co.*  
*P.O.Box 10*  
*Kenner, LA 70063*      *Incorrect Address*  
*Tel: 504 - 468 - 3608*

#23. Dredging Supply Co., Inc.  
701 Peters Road  
Harvey, LA, 70058      Tel: 504 - 367 - 2314  
FAX: 504 - 368 - 8359

#24. American Marine Inc.  
P.O.Box 940  
401 Shearer Blvd.  
Cocoa, FL, 32923      Tel: 305 - 636 - 5783

#25. B & B Boatbuilding Inc.  
Strar Route Box 3  
Brownsville, TX, 78520      Tel: 512 - 831 - 3122  
FAX: 512 - 831 - 2745

#26. Barney & Dickenson Inc.  
610 Prentice Road  
Vestal, NY, 13850      Tel: 607 - 729 - 1536  
FAX: 607 - 797 - 3931

#27. Bay Machinery Corp.  
543 South 8 th Street  
Richmond, CA, 94804      Tel: 415 - 236 - 9000  
FAX: 415 - 236 - 7212

#28. Best Equipment Technologies  
P.O.Box 429, Hwy 53 South  
Poplarville, MS, 39470      Tel: 601 - 795 - 2208

#29. Cargile Co.  
1201 S. Flagler Dr. B-4  
W. Palm Beach, FL, 33401      *Incorrect Address*  
*Tel: 407 - 833 - 9878*

#30. Consolidated Placer Dredging Co.  
17951 Sky Park Circle, Suite C  
Irvine, CA, 92714      Tel: 714 - 474 - 1120  
FAX: 714 - 863 - 9261

#31. Crisafulli Pump Co.  
P.O.Box 1051  
Crisafulli Dr.  
Glendive, Montana, 59330  
Tel: 406 - 365 - 3393  
FAX: 406 - 365 - 8088

#32. Dredging Specialists  
43 Dewitt Avenue  
Mattoon, IL, 61938  
Tel: 217 - 234 - 3344  
FAX: 217 - 234 - 3347

#33. *\*\*\*\*Dredge Technology Corp.*  
*Atlantic Stewardship Bank Buld.*  
*630 Godwin Avenue, Suite 201*  
*Midland park, New Jersey, 07432-1405*  
*Returned by P.O.*  
*Tel: 201 - 444 - 0581*

#34. Envirotech  
1700 Embassy Drive-712  
W. Palm Beach, FL, 33401  
Tel: 407 - 684 - 4774  
FAX: 407 - 684 - 4664

#35. Greenville Manufacturing Works  
600 Pine Street  
Greenville, OH, 45331  
Tel: 513 - 548 - 6100

#36. Harnischfeger Corp.  
P.O.Box 554  
Milwaukee, WI, 53201  
Tel: 414 - 671 - 4400

#37. Hendry Corp.  
5107 S. Westshore Blvd.  
Tampa, FL, 33681  
Tel: 813 - 831 - 1211

#38. Hitachi Construction Machinery  
611 Lockhaven Drive  
Houston, TX, 77073-5599  
Tel: 713 - 821 - 2400

#39. Humphreys Mineral Industries  
2219 Market Street  
Denver, CO, 80205  
Tel: 303 - 296 - 8000

#40. Innovative Material Systems Inc.  
15630 South Keeler  
Olathe, Kansas, 66062  
Tel: 913 - 829 - 2900  
FAX: 913-829-2989

#41. Kahl Scientific Instrument Corp.  
P.O.Box 1166  
737 W. Main Street  
El Cajon, CA, 92022

Tel: 619 - 444 - 2158  
1-800 - 800 - 4010

#42. Land and Sea Diesel Co.  
P.O.Box 151  
East Falmouth, MA, 02536

Tel: 617 - 540 - 5350

#43. McDermott Inc.  
1010 Common Stret  
New Orleans, LA, 70160

Tel: 504 - 587 - 4441

#44. Nippon Kokan K K  
450 Park Avenue  
New York, NY, 10022

Tel: 212 - 826 - 6250

#45. Oenstein & Koppel  
700 Route 46  
Cliffton, NJ, 07015

Tel: 201 - 478 - 8900

#46. R.A. Hanson Co. Inc.  
P.O.Box 7400  
Spokane, WA, 99207

Tel: 509 - 467 - 0770  
FAX: 509 - 466 - 0212

#47. ROHR Corp.  
P.O.Box 30-J  
Cincinnati, OH, 45230

Tel: 513 - 624 - 9220  
FAX: 513 - 624 - 9221

#48. Smalley Excavators  
71 Hartford Turnpike South  
Wallingford, Connecticut, 06492

Tel: 203 - 265 - 9352

#49. Spectrum Enterprises Inc.  
178 Center Point Road-South  
Hendersonville, TN, 37075-2060

Tel: 615 - 824 - 9699  
FAX: 615 - 822 - 0002

#50. Tacoma Boatbuilding Co., Inc.  
1840 Marine View Drive  
Tacoma, WA, 98422

Tel: 206 - 572 - 3600

#51. Twinkle Co.  
P.O.Box 79  
West Liberty, Iowa, 52776

Tel: 319 - 627 - 6655  
FAX: 319 - 627 - 4444

|  |  |
|--|--|
| #52. United Marine International Inc.<br>1436 W. River Road<br>P.O.Box 750<br>Waterloo, NY, 13165        | Tel: 315 - 539 - 5665<br>FAX: 315 - 539 - 5667   |
| #53. Assemblers Inc.<br>2355 Yankee Avenue<br>Durant IA 52747  | Tel: 319-785-6539  |
| #54. Sludge Engineering<br>43 Dewitt Avenue<br>Mattoon, Illinois, 61938                                  | Tel: 217 - 234 - 3344<br>FAX: 217 - 234 - 3347   |
| #55. Allis Mineral Systems<br>4800 Grand Avenue<br>Pittsburg, PA, 15225-1599                             | Tel: 412 - 269 - 5000<br>FAX: 412 - 269 - 5050   |
| #56. T.L.James & Co. Inc.<br>P.O.Box 826<br>Kenner, LA, 70063  | Tel: 504 - 467 - 6000<br>FAX: 504 - 469 - 1332   |
| #57. Dixie Dredge Co.<br>No. 1, Dredge Park<br>190 Center Point Road, South<br>Hendersonville, TN, 37075 | Tel: 615 - 822 - 3901<br>FAX: 615 - 822 - 0002   |
| #58 Dredgemasters International<br>200 Center Point Road South<br>Hendersonville, TN, 37075 - 2060       | Tel: 615 - 822 - 3500<br>FAX: 615 - 822 - 0002   |
| #59 Ellicott Machine Corp.<br>1611 Bush Street<br>Baltimore, MD 21230 - 7900                             | Tel: 410 - 837 - 7900<br>FAX: 410 - 752 - 3294   |
| #60 Keene Engineering Co.<br>9330 Corbin Avenue<br>Northridge California, 91324                          | "Nessie" Portable Cutterhead Dredger<br>Tel: 818 - 993 - 0411<br>FAX: 818 - 993 - 0447 |
| #61 Aquatics Unlimited<br>2150 Franklin Canyon Road<br>Martinez, California 94553                        | "Aquamog"<br>Tel: 415 - 370 - 9175<br>FAX: 415 - 370 - 9179                            |
| #62 Dredging Supply Co., Inc.<br>701 Peters Road<br>Harvey, LA, 70058                                    | Tel: 504 - 367 - 2314<br>FAX: 504 - 368 - 8359   |



# **Appendix C**

## **Copy of Letter Sent for Obtaining Information on Dredgers Suitable for Contaminated Sediment Dredging**

---

**Copy of letter sent for obtaining information on dredgers suitable for contaminated sediment dredging**

## Estuaries Division Hydraulics Laboratory

You probably know that the U.S. Army Corps of Engineers is responsible for executing about 500 million cubic yards of dredging per year in the United States. About 20 percent of this volume is undertaken by the District Offices of the Corps and the remaining is executed through contractors.

In recent years, we have been required to handle contaminated sediments as a part of the dredging operations. Hence, at the Waterways Experiment Station, we have undertaken the task of preparation of a reference manual which will contain information on the latest technology and equipment available for dredging contaminated sediments from small and shallow water bodies such as lakes and ponds as well as from larger and deeper water bodies such as bays and estuaries. The manual will essentially be a reference catalogue containing details of equipment along with a performance evaluation and applicability of each type of equipment. The dredging equipment to be reported may be portable / non-portable, it may have been marketed for general sale / custom-designed, or it may even be made available for temporary use by domestic or overseas contractors.

Copies of the proposed manual will be made available to the district offices of the Corps of Engineers as well as to practicing engineers and others involved in the planning and execution of small and large dredging operations in order to facilitate selection of proper equipment to meet their specific needs.

We have undertaken a detailed literature search in this connection and we would appreciate receiving your input in order to make this manual as upto-date and comprehensive as possible. We therefore request you to please send copies of the catalogs and pamphlets giving information on the various types of dredging equipment marketed by your company for handling contaminated sediment. They should include all the technical specifications and details of capabilities and special features of each type.

1. We would like to have the following basic information in particular:
  - dimensions and weight of the dredger,
  - size of suction and delivery pipe,
  - pump type and capacity (flow rate and H.P.),
  - cutter assembly details.

- working capacity of the dredger,
- anchoring system,
- transport requirements in case of portable dredger,
- description of special design features that make it particularly suitable for dredging contaminated sediment with a minimum of adverse environmental impact,
- a line drawing and a photograph.

2. If the dredger has been already deployed, please give a list of sites, the year of use, volume of material dredged, type of soil, nature of contaminants, and the order of magnitude of cost of dredging per cubic yard. In case such information is not readily available with you, please provide the name and address of the agencies who have used the equipment, so that we might be able to get this information directly from them.

3. We are also considering preparation of a video to accompany this manual in order to provide an audio-visual presentation of the equipment and its actual working features. In case you have a short video which either gives a description of the dredger and / or its field use, we would appreciate receiving a copy of the same along with your written permission to include it in our video, in case it is copy-righted.

4. If you have collaboration with any Company based in U.S.A., please give their name and address so that we will be able to correspond with them for any further information.

We hope that you will consider the proposed manual as an excellent opportunity to directly reach the prospective users of your equipment and extend your cooperation in its preparation by providing the requested information.

If you have any questions, please contact Dr. T. M. Parchure at 601-634-3213 or Mr. Mike Alexander at 601-634-3904.

Sincerely,

T.M.Parchure

# **Appendix D**

## **List of Companies Which Sent Information Under Present Survey**

---

**List of Companies Which Sent Information Under Present Survey  
(24 Companies)**

|    |  |   |
|----|--|---|
| 01 | American Marine & Machinery Co., Inc.<br>(AAMCO)<br>178 Center Point Road South<br>Hendersonville, TN, 37075 | Tel: 615 - 824 - 9699<br>FAX: 615 - 822 - 0002                          |
| 02 | Dredgemasters International<br>200 Center Point Road South<br>Hendersonville, TN, 37075 - 2060               | Tel: 615 - 822 - 3500<br>FAX: 615 - 822 - 0002                          |
| 03 | Eagle Iron Works<br>127 Holcomb<br>Des Moines, Iowa, 50313   | Tel: 515 - 243 - 1123<br>FAX: 515 - 243 - 8214                          |
| 04 | Ellicott Machine Corp.<br>1611 Bush Street<br>Baltimore, MD 21230 - 7900                                     | Tel: 410 - 837 - 7900<br>FAX: 410 - 752 - 3294                          |
| 05 | Intercontinental Engineering<br>Manufacturing Corp.<br>P.O.Box 9055<br>Kansas City, Missouri, 64168          | Tel: 816 - 741 - 0700<br>Tel: 800 - 821 - 3182<br>FAX: 816 - 741 - 5232 |
| 06 | W & S Development Inc.<br>4957 Main Street<br>Greenbush, MI 48738  | Tel: 517 - 724 - 5463   |
| 07 | H & H Pump and Dredge Co.<br>520 Highway 322<br>Clarksdale MS 38614<br>Attn: Mr. Howard Stovall              | Tel: 601 - 627 - 9631   |
| 08 | Keene Engineering Co.<br>9330 Corbin Avenue<br>Northridge California, 91324                                  | Tel: 818 - 993 - 0411<br>FAX: 818 - 993 - 0447                          |
| 09 | Aquatics Unlimited<br>2150 Franklin Canyon Road<br>Martinez, California 94553                                | Tel: 415 - 370 - 9175<br>FAX: 415 - 370 - 9179                          |

|    |   |  |
|----|---|--|
| 10 | Gulf Coast Trailing Co.<br>P.O.Box 20116<br>New Orleans, LA, 70141<br>Atten: Mr. Steve Chatry | Tel: 504 - 461 - 9230                          |
| 11 | Dredging Supply Co., Inc.<br>701 Peters Road<br>Harvey, LA, 70058                             | Tel: 504 - 367 - 2314<br>FAX: 504 - 368 - 8359 |
| 12 | Barney & Dickenson Inc.<br>610 Prentice Road<br>Vestal, NY, 13850                             | Tel: 607 - 729 - 1536<br>FAX: 607 - 797 - 3931 |
| 13 | American Mining and Machinery Corp.<br>3000 S. Washington Road<br>West Palm Beach, FL, 33405  | Tel: 407 - 820 - 0049<br>FAX: 407 - 820 - 0049 |
| 14 | Consolidated Placer Dredging Co.<br>17951 Sky Park Circle, Suite C<br>Irvine, CA, 92714       | Tel: 714 - 474 - 1120<br>FAX: 714 - 863 - 9261 |
| 15 | Crisafulli Pump Co.<br>P.O.Box 1051<br>Crisafulli Dr.<br>Glendive, Montana, 59330             | Tel: 406 - 365 - 3393<br>FAX: 406 - 365 - 8088 |
| 16 | Innovative Material Systems Inc.<br>15630 South Keeler<br>Olathe, Kansas, 66062               | Tel: 913 - 829 - 2900<br>FAX: 913-829-2989     |
| 17 | ROHR Corp.<br>P.O.Box 30-J<br>Cincinnati, OH, 45230   | Tel: 513 - 624 - 9220<br>FAX: 513 - 624 - 9221 |
| 18 | Assemblers Inc.<br>2355 Yankee Avenue<br>Durant IA 52747                                      | Tel: 319-785-6539                              |
| 19 | Sludge Engineering<br>43 Dewitt Avenue<br>Mattoon, Illinois, 61938                            | Tel: 217 - 234 - 3344<br>FAX: 217 - 234 - 3347 |
| 20 | T. L. James & Co. Inc.<br>P.O.Box 826<br>Kenner, LA, 70063                                    | Tel: 504 - 467 - 6000<br>FAX: 504 - 469 - 1332 |

|    |   |  |
|----|---|--|
| 21 | Dixie Dredge Co.<br>No. 1, Dredge Park<br>190 Center Point Road, South<br>Hendersonville, TN, 37075 | Tel: 615 - 822 - 3901<br>FAX: 615 - 822 - 0002 |
| 22 | Aquarius Smalley<br>P. O. Box 215<br>220 N. Harrison<br>North Prairie, WI, 53153                    | Tel: 414 - 392 - 2162<br>FAX: 414 - 392 - 2984 |
| 23 | Commerce Consultants International<br>4838, 25 th Road North,<br>Arlington, VA, 22207               | Tel: 703 - 243 - 8978<br>FAX: 703 - 276 - 7338 |
| 24 | Oceaneering Technologies<br>501 Prince George's Blvd<br>Upper Marlboro, MD, 20772                   | Tel: 301 - 249 - 3300<br>FAX: 301 - 249 - 4022 |

# **Appendix E**

## **Response Received from Companies Under Present Survey**

---

**Response Received From Companies Under Present Survey**  
**(24 Companies)**

**Note:** Names of companies which have offered promising equipment are shown in bold and with \*

| No. | Name of Company   | Response                                  | Info. Recd.                            |
|-----|---|---|--|
| 01  | American Marine & Machinery Co.<br>Hendersonville, TN                               | Lr. Dt. 3/9/93                            | Folder                                 |
| 02* | <b>DredgeMasters International Inc.</b> <b>Lr. Dt. 2/1/93</b><br>Hendersonville, TN |   | <b>Folders</b>                         |
| 03  | Eagle Iron Works<br>Des Moines, IA  | No letter                                 | Brochure                               |
| 04* | <b>Ellicott Machine Corp.</b><br>Baltimore, MD                                      | No letter<br>Dredge 'Mud Cat'             | <b>Brochures</b><br><b>Video</b>       |
| 05  | Intercontinental Engineering<br>Manufacturing Corp.<br>Kansas City, MO              | Lr. Dt. 1/11/93<br>Only custom made       |  |
| 06  | W & S Development Inc.<br>Greenbush, MI   | Lr. Dt. 5/13/93                           | Brochure<br>Video                      |
| 07  | H & H Pump and Dredge Co.<br>Clarksdale MS  | Lr. Dt. 4/29/93                           | Folder                                 |
| 08* | <b>Keene Engineering Co.</b><br>Northridge CA                                       | <b>Lr. Dt. 1/21/93</b><br>Dredge "Nessie" | <b>Video</b><br><b>Catalog</b>         |
| 09* | <b>Aquatics Unlimited</b><br>Martinez, CA   | <b>Lr. Dt. 2/3/93</b><br>Dredge "Aquamog" | <b>Video</b><br><b>Catalog, Folder</b> |
| 10  | Gulf Coast Trailing Co.<br>New Orleans, LA  | No letter                                 | Brochure                               |
| 11* | <b>Dredging Supply Co.</b><br>Harvey, LA  | <b>Lr. Dt. 2/5/93</b>                     | <b>Folder</b>                          |
| 12  | Barney & Dickenson Inc.<br>Vestal, NY   | Lr. Dt. 2/2/93                            |  |

|            |  |                        |                         |
|------------|--|------------------------|-------------------------|
| 13         | American Mining & Machinery Co.<br>West Palm Beach, FL                                     | Lr. Dt. 2/4/93         | Brochure                |
| 14         | Consolidated Placer Dredging Co.<br>Irvine, CA   | Lr. Dt. 2/1/93         | Brochure                |
| 15         | Crisafulli Pump Co.<br>Glendive, MT  | Lr. Dt. 2/93           | Folder                  |
| <b>16*</b> | <b>Innovative Material Systems Inc.</b><br><b>Olathe, KS</b>                               | <b>Lr. Dt. 2/16/93</b> | <b>Brochure</b>         |
| 17         | ROHR Corp.<br>Cincinnati, OH   | No letter              | Folder                  |
| 18         | Assemblers Inc.<br>Durant, IA  | Lr. Dt. 1/6/93         | Brochure                |
| 19         | Sludge Engineering<br>Mattoon, IL  | Lr. Dt. 2/15/93        | Brochure<br>3 Reports   |
| 20         | T. L. James & Co. Inc.<br>Ruston, LA   | No letter              | Folder                  |
| 21         | Dixie Dredge Co.<br>Hendersonville, TN   | Lr. Dt. 2/5/93         | Folder                  |
| 22         | Aquarius Smalley<br>North Prairie, WI  | Lr. Dt. 5/13/93        | Brochures               |
| 23         | Commerce Consultants International<br>Arlington, VA  | Lr. Dt. 8/12/93        | Brochure                |
| <b>24*</b> | <b>Oceaneering Technologies<br/>501 Prince George's Blvd<br/>Upper Marlboro, MD, 20772</b> | <b>FAX Dt. 9/19/95</b> | <b>Note &amp; Photo</b> |

# **Appendix F**

## **List of Companies with Promising Equipment for Contaminated Sediment Dredging**

---

**List of Companies With Promising Equipment For Contaminated Sediment Dredging  
(7 Companies in no particular order)**

|    |  |                |  |
|----|--|----------------|--|
| 1. | Keene Engineering Co.<br>9330 Corbin Avenue<br>Northridge California, 91324                    | "Nessie"       | Tel: 818 - 993 - 0411<br>FAX: 818 - 993 - 0447 |
| 2. | Aquatics Unlimited<br>2150 Franklin Canyon Road<br>Martinez, California 94553                  | "Aquamog"      | Tel: 415 - 370 - 9175<br>FAX: 415 - 370 - 9179 |
| 3  | Ellicott Machine Corp.<br>1611 Bush Street<br>Baltimore, MD 21230 - 7900                       | "Mudcat"       | Tel: 410 - 837 - 7900<br>FAX: 410 - 752 - 3294 |
| 4. | Dredgemasters International<br>200 Center Point Road South<br>Hendersonville, TN, 37075 - 2060 | "Mudmaster"    | Tel: 615 - 822 - 3500<br>FAX: 615 - 822 - 0002 |
| 5. | Dredging Supply Co., Inc.<br>701 Peters Road<br>Harvey, LA, 70058                              | "Barracuda"    | Tel: 504 - 367 - 2314<br>FAX: 504 - 368 - 8359 |
| 6. | Innovative Material Systems Inc.<br>15630 South Keeler<br>Olathe, Kansas, 66062                | "Versi-Dredge" | Tel: 913 - 829 - 2900<br>FAX: 913 - 829 - 2989 |
| 7. | Oceaneering Technologies<br>501 Prince George's Blvd<br>Upper Marlboro, MD, 20772              | "TCCD"         | Tel: 301 - 249 - 3300<br>FAX: 301 - 249 - 4022 |

# **Appendix G**

## **Details of Promising Equipment**

---

## **Details of Promising Equipment**

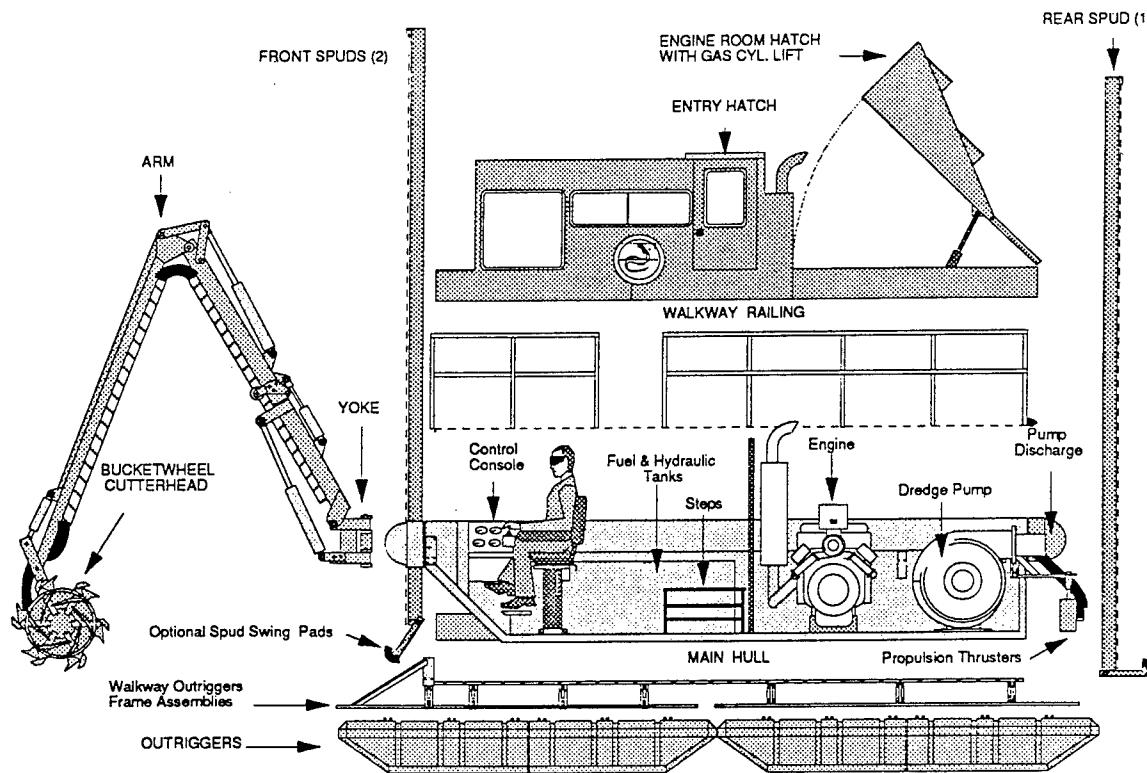
Information received from the following companies is presented in this Appendix :

|    |                                  |                |
|----|----------------------------------|----------------|
| 1. | Keene Engineering Co.            | "Nessie"       |
| 2. | Aquatics Unlimited               | "Aquamog"      |
| 3  | Ellicott Machine Corp.           | "Mudcat"       |
| 4. | Dredgemasters International      | "Mudmaster"    |
| 5. | Dredging Supply Co., Inc.        | "Barracuda"    |
| 6. | Innovative Material Systems Inc. | "Versi-Dredge" |
| 7. | Oceaneering Technologies         | "TCCD"         |

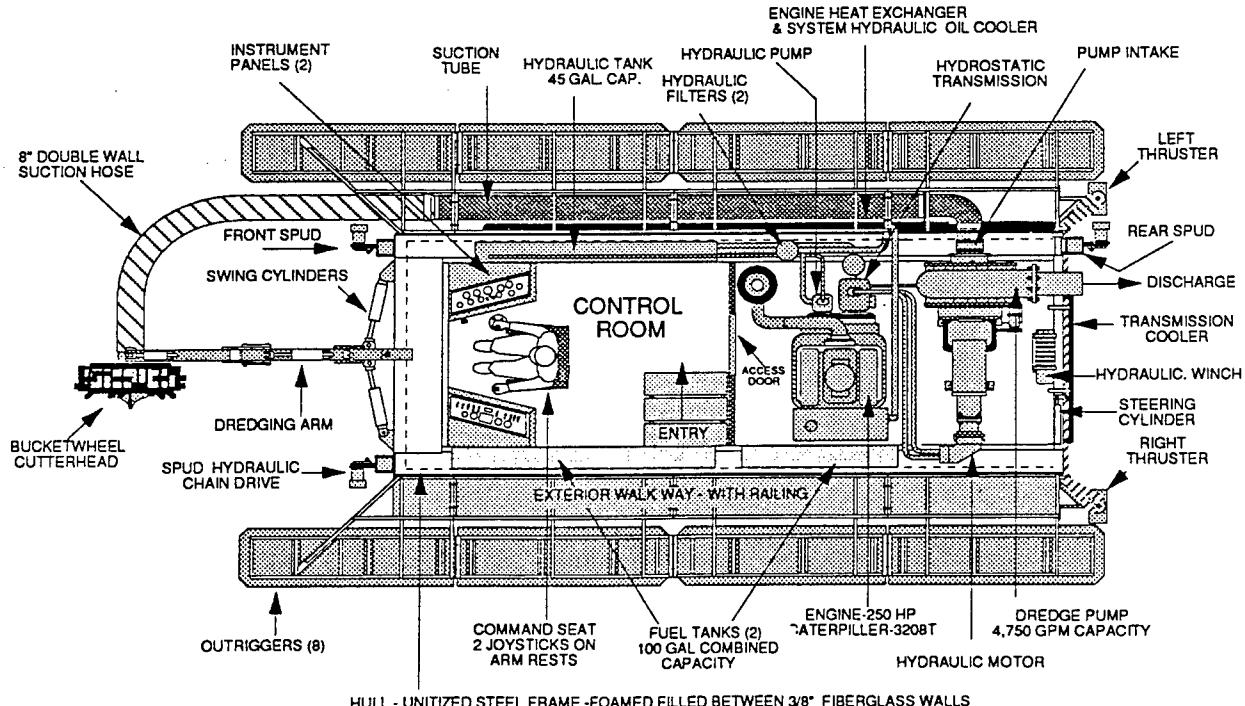
1

**Keene Engineering Co. "Nessie"**

## SIDE PLAN VIEW NESSIE N8DX - GENERAL COMPONENTS



## TOP PLAN VIEW NESSIE N8DX - GENERAL COMPONENTS





## NESSIE-8DX DREDGE

### SPECIFICATIONS MODEL 8DX

#### GENERAL

|  |                                   |                             |             |
|--|-----------------------------------|-----------------------------|-------------|
| Length of Frame                        | 19'1"                             | Width of Frame              | 7'2"        |
| Width with Outriggers                  | 13'10"                            | Hull Height, Dry            | 89"         |
| Draft (Depth in Water)                 | 17"                               | Freeboard (Height in Water) | 16"         |
| Flotation, Outriggers                  | 8 Floats                          | Weight of Dredge            | 14,500 Lbs. |
| Trailer Dimensions                     | 28' x 8'4"                        | Weight of Trailer           | 2,500 Lbs.  |
| Spuds (3each)                          | 5" x 5" x 22'                     | Weight, each Spud           | 400 Lbs.    |
| <u>Cutterhead - 8 Inch Bucketwheel</u> |                                   |                             |             |
| Dimensions:                            | 36 inch Diameter x 24 inches Wide |                             |             |
| Hydraulic with 18:1 Gearbox            |                                   | Weight:                     | 540 Lbs.    |
| Torque:                                | 4,167 Foot Pounds                 |                             |             |
| Automatic Swing Motion                 | Lenght of Cut:                    | 6Feet at 45 Degrees         |             |

#### ENGINE:

|                         |                              |              |          |
|-------------------------|------------------------------|--------------|----------|
| Caterpillar Model 3208T | V-8 Diesel-Turbocharged      |              |          |
| 12 Volt, Electric Start | Alternator: 12volts / 51Amps |              |          |
| Max. Flywheel           | Brake Horse Power            | at 2,800 RPM | 300 HP   |
| Intermittend Duty**     | Brake Horse Power            | at 2,600 RPM | 250 HP   |
| Continiuous Duty***     | Brake Horse Power            | at 2,400 RPM | 200 HP   |
| <u>FUEL CONSUMPTION</u> |                              | 2,400 RPM    | 12.5 GPH |
| ( FULL LOAD )           | At:                          | 2,200 RPM    | 11.7 GPH |
|                         |                              | 1,800 RPM    | 10.0 GPH |

#### KEENE DREDGING PUMPS:

|   |                                |
|---|--------------------------------|
| Model 6100 Material: Hi Chrome White Iron.                    | Hardness: 650 Brinell Minimum. |
| Impeller Design: Vortex, 8"x 8" x 25"                         | Weight of Pump: 2,130 Lbs.     |
| Maximum Volume at 250 Horse Power:                            | 4,600 Gallons Per Minute       |
| Maximum Working Pressure:                                     | 231 Feet of head / 100 P.S.I.  |
| Maximum Size of Passing Solid Sphere is 8 inches in diameter. |                                |
| Priming Pump-Model 350 Hydraulic Powered.                     | Size: 4x3 Intake & Discharge   |

#### HYDROSTATIC TRANSMISSION ( Closed Loop)

|       |   |
|-------|---|
| Pump  | Sundstrand Model 90-Variable Displacement |
| Motor | Volvo Model F-250-Fixed Displacement      |

#### HYDRAULIC POWER SYSTEM (Open Loop)

|   |
|---|
| EATON "70422-RAU" Piston Pump, variable displacement with pressure / flow, compensated with Load Sensing Control. 2.77 cu.in / rev. = 29 GPM at 2,400 RPM |
| Max. Rated Speed & Pressure = 3,000 RPM & 3,100 P.S.I.  |
| Directional Valves Fully Integrated Electro-Hydraulic Cartridge System  |
| Directional Controls Twin Joystics  |

|            |  |              |
|------------|--|--------------|
| Model 8DX  | Price F.O.B. Factory (Less Hydraulic Traller)      | \$127,000.00 |
| Model 8DXT | Price F.O.B. Factory (Including Hydraulic Traller) | \$135,000.00 |

\*\* One hour of operation followed by an hour at or below the continuous rating.

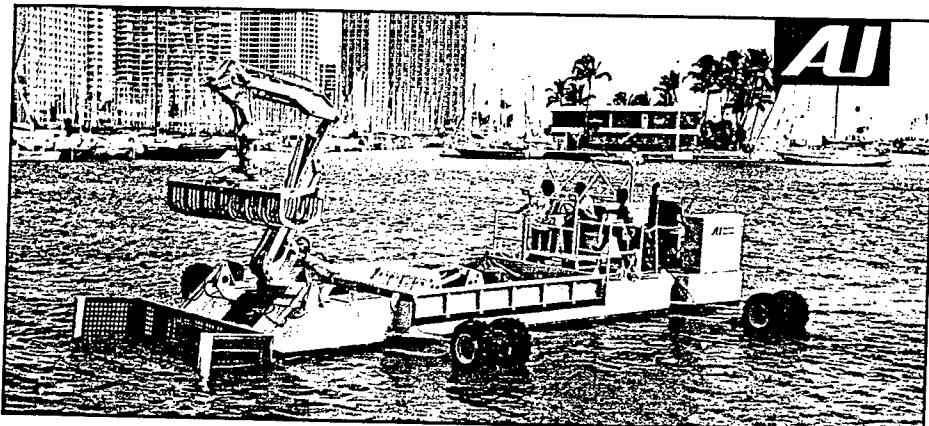
\*\*\* Without interruption (Continuous)

Prices and equipment are subject to change without notice.

**Aquatics Unlimited "Aquamog"**

## ENVIRONMENTAL RESPONSE VESSELS

**Aquatics Unlimited** is a design, manufacturing and service company that offers a complete line of Aquatic Ecosystem Creation, Restoration and Maintenance Equipment.



Harbor Mog HRX 109

The **HARBOR MOG** is a *shallow draft*/multi-purpose work boat designed to perform functions ranging from debris/oil cleanup to bucket/suction dredging to aquatic plant control operations to fire fighting to general maintenance activities using interchangeable attachments.

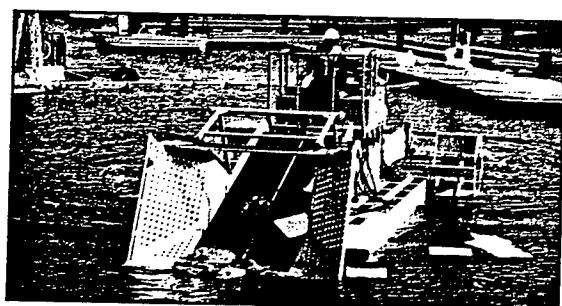


Aquamog SRX 109/Suction Head



Aquamog PRX 163/Oil Mop

The **AQUAMOGS** are *shallow draft*/multi-purpose vessels that perform functions from debris/oil cleanup to bucket/suction dredging to emergent/submerged aquatic plant control using interchangeable attachments.



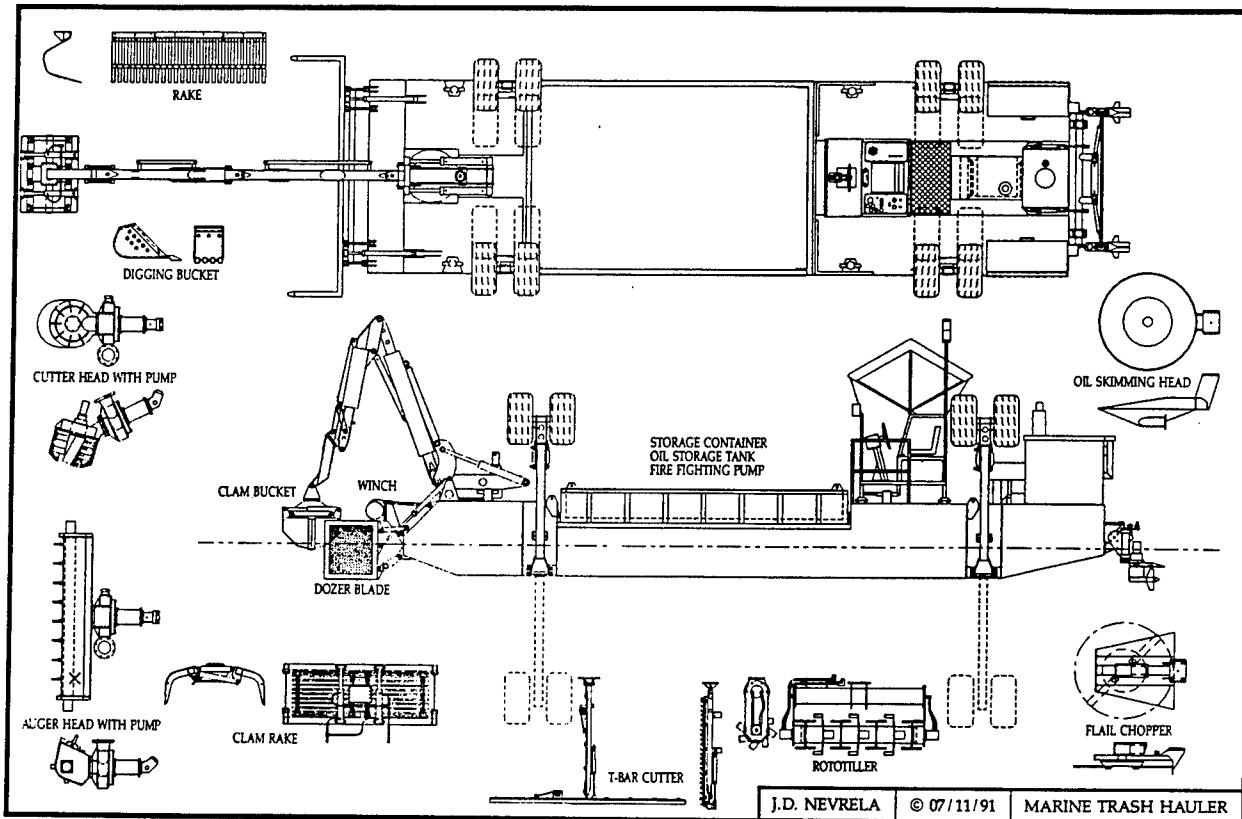
AURS8-200

Call us now to meet your **OPA 90** oil spill recovery requirements. The **AQUAMOGS** and **HARBOR MOG** can be equipped with the different types of skimmer and processor attachments available on the market and various tank configurations are available for oil storage.



**AQUATICS UNLIMITED**

2150 Franklin Canyon Road • Martinez, California 94553 • USA  
Phone (510) 370-9175 • 1-800-243-8664 • Fax (510) 370-9179



#### Debris Control Tools

- Skimmer/Collector Head 12' to 18'
- Clam Rake 8' x 5'
- Rake 8'
- Tool Rotator, 360 Continuous
- Hydraulic Winch, 9,600 Pound
- Crane Hook, 3,000 Pound

#### Oil Spill Control Tools

- Submersible Skimming Head
- 3,000 Gallon Processing Tank

#### Fire Fighting System

- 2,000 G.P.M. @ 100 P.S.I.

#### Hydraulic Dredging Tools

- Auger Head 8" Pump, Dredges to a Depth of 15 ft., 150 T.D.H.
- Cutter Head 36" Diameter, 30,000 lb./In Torque, 150 ft. T.D.H.

#### Bucket Dredging Tools

- Clam Bucket 48" - 0.7 Cubic Yard
- Clam Bucket 24" - 0.35 Cubic Yard
- Mud Bucket 48" - 0.4 Cubic Yard
- Digging Bucket 18" - 0.2 Cubic Yard

#### Aquatic Plant Control Tools

- T-Bar Cutter, For Submerged Plant Control
- Rototiller, Submerged Root Removal
- Flail Chopper, Emergent Plant Control

#### HARBOR MOG HRX-109 SPECIFICATIONS

|                |                                 |             |                |
|----------------|---------------------------------|-------------|----------------|
| Transport:     | Length.....                     | 40' 0"      | 12.20m         |
|                | Width.....                      | 10' 0"      | 3.05m          |
|                | Height.....                     | 9' 6"       | 2.9m           |
|                | Weight.....                     | 32,000 lbs. | 14,500kg       |
| Dimensions:    | Length Operating.....           | 64' 6"      | 13.56m         |
|                | Width Operating.....            | 10' to 27'  | 3.05m to 8.23m |
|                | Width Maximum.....              | 10' 0"      | 3.05m          |
|                | Height Minimum.....             | 9' 6"       | 2.9m           |
|                | Height Above Water Line.....    | 8' 0"       | 2.44m          |
| Vessel:        | Length.....                     | 37' 6"      | 11.41m         |
|                | Width.....                      | 10' 0"      | 3.05m          |
|                | Depth.....                      | 30' / 46'   | 9.07m / 1.2m   |
|                | Material.....                   | Steel       | Steel          |
|                | Water Tight Compartments.....   | 5           | 5              |
| Payload Cont.: | Length.....                     | 15' 0"      | 4.6m           |
|                | Width.....                      | 10' 0"      | 3.05m          |
|                | Height.....                     | 1.5'        | 0.5m           |
|                | Storage Volume.....             | 18 cu. yds. | 14 cu.m        |
|                | Load.....                       | 15,000 lbs. | 7 Tons         |
| Supports:      | Number.....                     | 4           | 4              |
|                | Vertical Movement.....          | 105 Deg.    | 105 Deg.       |
|                | Depth Maximum.....              | 8' 6"       | 2.6m           |
| Propulsion:    | High Speed Dual Propeller Drive |             |                |

|                       |   |                   |                |
|-----------------------|---|-------------------|----------------|
| Excavator:            | Depth at swing pin .....                    | 21' 0"            | 6.4m           |
|                       | Horizontal Reach .....                      | 26' 0"            | 8m             |
|                       | Vertical Reach .....                        | 22' 6"            | 6.9m           |
|                       | Swing .....                                 | 360 deg.          | 360 deg.       |
| Power Unit:           | Continuous                                  | Continuous        | Continuous     |
|                       | Engine .....                                | John Deere        | John Deere     |
|                       | Model .....                                 | 4039T             | 4039T          |
|                       | Aspiration .....                            | Turbo-Charged     | Turbo Charged  |
|                       | Power Rating .....                          | 109HP @ 2500RPM   | 81KW @ 2500RPM |
|                       | Electrical System .....                     | 12 Volt           | 12 Volt        |
|                       | Fuel Tank Capacity .....                    | 160 U. S. Gallons | 600 Liters     |
| Hydraulic System:     | System Pressure .....                       | 2,200 / 3,500 psi | 150 / 240 bar  |
|                       | 16 Control Functions                        |                   |                |
|                       | All Speeds Infinitely Adjustable            |                   |                |
| Control Bridge:       | Visibility .....                            | 360 deg.          |                |
|                       | Open Deck, With Canopy and Operators Chair. |                   |                |
| Corrosion Protection: | Paint .....                                 | Epoxy System      | Epoxy System   |
|                       | Anodes .....                                | Sacrificial       | Sacrificial    |

All Specifications Subject to Change Without Notice



# AQUAMOG PRX 163

- Bucket Dredging
- Hydraulic Dredging, Auger/  
Cutter Heads
- 5,000 Foot Pumping  
Capacity
- Submerged/Emergent  
Aquatic Plant Control
- Debris Removal System
- Oil Spill Recovery System
- Interchangeable Tools

**A**quatics Unlimited's AQUAMOG PRX 163 LTL is the ultimate multi-purpose aquatic ecosystem creation, restoration and maintenance vessel.

The AQUAMOG performs functions ranging from bucket/suction dredging to submerged/emergent aquatic weed control using interchangeable attachments. Standard attachments range from clam/digging buckets to hydraulic cutter/auger heads for dredging and flail/sickle mowers to rototillers and rakes for aquatic weed control. Other attachments are available to meet specific job requirements such as stump cutters and tool rotators.

The AQUAMOG's excavating arm can reach a depth of more than 20 feet, a height of 20 feet, and swings a minimum of 180 degrees. A unique feature of the Aquamogs is their capacity for quick tool exchange that allows for interchangability from hydraulic to bucket dredging in a matter of minutes.

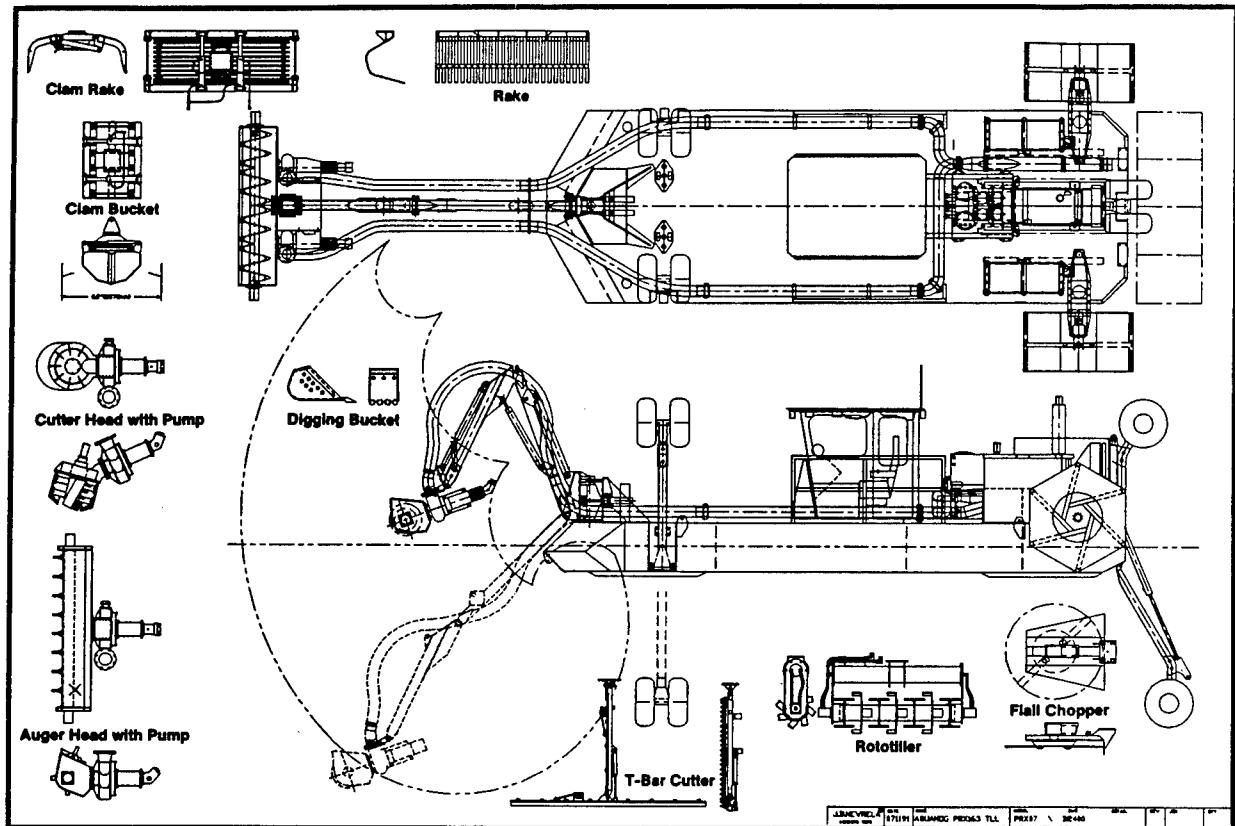
The AQUAMOG is the only piece of equipment available to perform all pond, lake, reservoir, canal, marsh or wetland maintenance requirements.

Aquatics Unlimited also produces the AQUAMOG SRX 109, the HARBOR MOG, and a complete line of Aquatic Weed Harvesting and Aeration Systems.



## AQUATICS UNLIMITED

2150 Franklin Canyon Road • Martinez, California 94553 • USA  
Phone (510) 370-9175 • 1-800-243-8664 • Fax (510) 370-9179



### Hydraulic Dredging Tools

- Auger Head 8' Pump, Dredges to a depth of 15', 180 T.D.H.
- Cutter Head 32" Diameter, 32,000 lb./in. torque, 180 ft. T.D.H.

### Bucket Dredging Tools

- Clam Bucket 48", 0.7 cu. yd.
- Clam Bucket 24", 0.35 cu. yd.
- Mud Bucket 48", 0.4 cu. yd.
- Digging Bucket 18", 0.2 cu. yd.
- Tool Rotator
- Hydraulic Reach Extensions

### Oil Spill Control Tools

- Submersible Skimming Head
- 3,000 Gallon Processing Tank

### Aquatic Plant Control Tools

- T-Bar Cutter, For submerged weed control. Cuts 10' swath up to a depth of 20'
- Flail Chopper, Emergent plant control cuts Cattails and Brush up to a 4" diameter in a 5' swath
- Rototiller, Submerged root removal cuts an 8' swath at up to a 15' depth
- Clam Rake, 8' width for trash/weed pick-up and disposal
- Sweeper Rake, Sweeps floating vegetation and debris in a 20' wide swath

### AQUAMOG PRX 163LTL Specifications

#### Transport Dimensions:

|        |                        |
|--------|------------------------|
| Length | 38'-8" (11,800 mm)     |
| Width  | 10'-0" (3,050 mm)      |
| Height | 9'-2" (2,800 mm)       |
| Weight | 18,500 lbs. (8,400 kg) |

#### Operating Dimensions:

|                         |                   |
|-------------------------|-------------------|
| Length Min.             | 30'-8" (9,300 mm) |
| Width                   | 17'-0" (5,200 mm) |
| Width Min.              | 10'-0" (3,050 mm) |
| Height Min.             | 9'-2" (2,800 mm)  |
| Height Above Water Line | 7'-8" (2,340 mm)  |

#### Vessel:

|                          |                   |
|--------------------------|-------------------|
| Length                   | 30'-8" (9,300 mm) |
| Width                    | 10'-0" (3,050 mm) |
| Depth                    | 30" (762 mm)      |
| Material                 | 10 GA Steel       |
| Water Tight Compartments | 5                 |

#### Propulsion:

|                                      |  |
|--------------------------------------|--|
| Dual Independently Reversible Paddle | .66 dia. x 36"                           |
| Wheels                               | Swing Away for Transport (1730 x 620 mm) |

#### Supports:

|                   |                  |
|-------------------|------------------|
| Number            | .3               |
| Vertical Movement | .105" (2,670 mm) |
| Depth Max.        | 8'-6" (2,600 mm) |
| Tires             | Dual             |
| Diameter          | .33" (840 mm)    |
| Width             | .15" (380 mm)    |
| Make              | Goodyear Terra   |
| Size              | .12.5L-16        |

#### Excavator:

|                      |                    |
|----------------------|--------------------|
| Depth (at swing pin) | .14 (4,300 mm)     |
| Horizontal Reach     | .18' (5,500 mm)    |
| Vertical Reach       | .18'-8" (5,700 mm) |
| Swing                | .180°              |

#### Power Unit:

|                    |                           |
|--------------------|---------------------------|
| Engine             | John Deere                |
| Model              | 4059T                     |
| Aspiration         | Turbo-Charged             |
| Power Rating       | 165 hp/2,500 rpm (122 kw) |
| Electrical System  | .12 V                     |
| Fuel Tank Capacity | .160 US gal. (606 liter)  |

#### Hydraulic System:

|                                  |                               |
|----------------------------------|-------------------------------|
| System Pressure                  | 2,200/3,500 psi (152/242 bar) |
| Pump                             | 4                             |
| Pressure Compensated, Variable   |                               |
| Volume Pumps and Load Sensing    |                               |
| Valve Control 13 Functions       |                               |
| All speeds infinitely adjustable |                               |
| Oil Cooling                      | Forced Air                    |
| Oil Reservoir                    | .120 US gal. (455 liter)      |

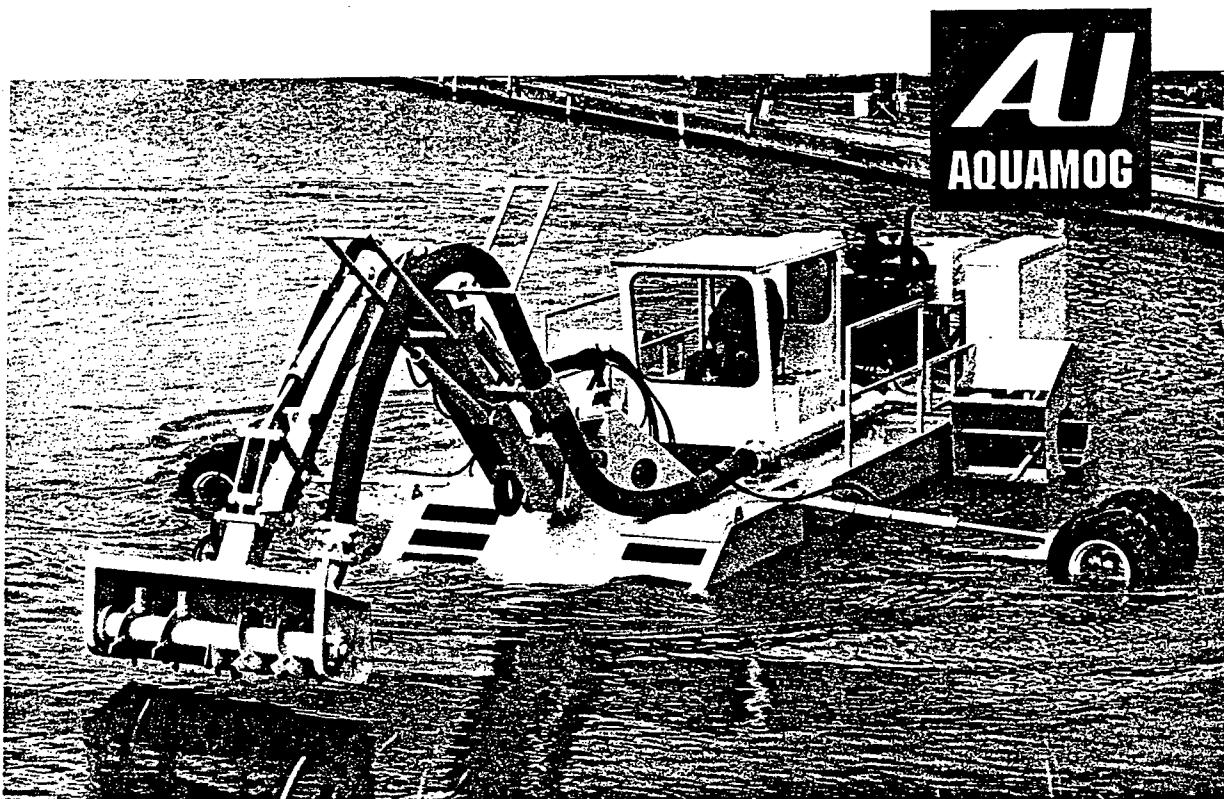
#### Control Bridge:

|                                       |                 |
|---------------------------------------|-----------------|
| Enclosed Insulated Heated and Air     | Visibility 360° |
| Conditioned Cab, Operators Chair with |                 |
| Arm Rests                             |                 |

#### Corrosion Protection:

|                       |
|-----------------------|
| AM-E-POX Epoxy System |
|-----------------------|

All Specifications Subject to Change Without Notice



# AQUAMOG SRX 109

- Bucket Dredging
- Hydraulic Dredging, Auger/  
Cutter Heads
- 2,500 Foot Pumping  
Capacity
- Submerged/Emergent  
Aquatic Plant Control
- Debris Removal System
- Oil Spill Recovery System
- Interchangeable Tools

**A**quatics Unlimited's AQUAMOG SRX 109 is a multi-purpose aquatic ecosystem creation, restoration and maintenance vessel — economy and transportability combined.

The AQUAMOG performs functions ranging from bucket/suction dredging to submerged/emergent aquatic weed control using interchangeable attachments. Standard attachments range from clam/digging buckets to hydraulic cutter/auger heads for dredging and flail/sickle mowers to rototillers and rakes for aquatic weed control. Other attachments are available to meet specific job requirements such as stump cutters and tool rotators.

The AQUAMOG's excavating arm can reach a depth of more than 20 feet, a height of 20 feet, and swings a minimum of 180 degrees. A unique feature of the Aquamogs is their capacity for quick tool exchange that allows for interchangeability from hydraulic to bucket dredging in a matter of minutes.

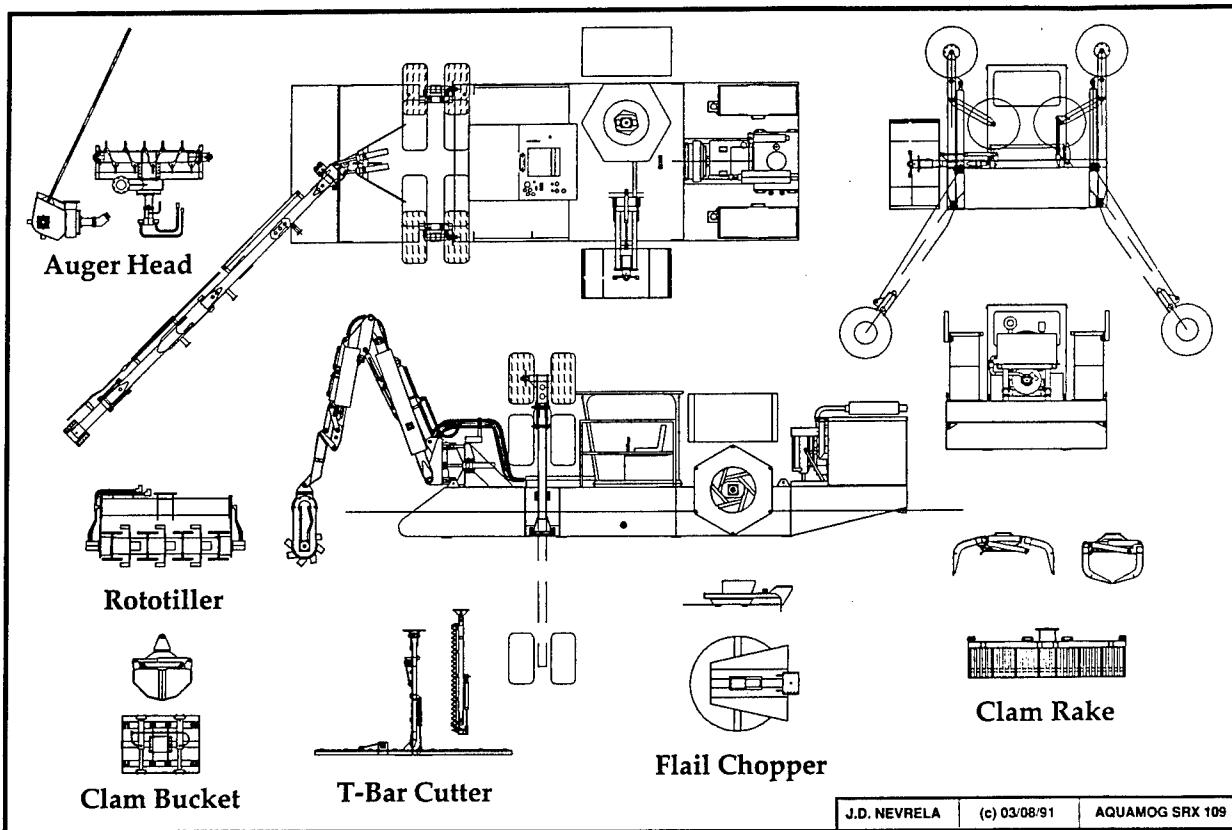
The AQUAMOG is the only piece of equipment available to perform all pond, lake, reservoir, canal, marsh or wetland maintenance requirements.

Aquatics Unlimited also produces the AQUAMOG PRX 163, the HARBOR MOG, and a complete line of Aquatic Weed Harvesters and Aeration Systems.



## AQUATICS UNLIMITED

2150 Franklin Canyon Road • Martinez, California 94553 • USA  
Phone (510) 370-9175 • 1-800-243-8664 • Fax (510) 370-9179



### Hydraulic Dredging Tools

- Auger Head 6" Pump, Dredges to a Depth of 15', 90 Ft. T.D.H.
- Cutter Head 26" Diameter, 15,000 Lb./In. Torque, 90 Ft. T.D.H.

### Bucket Dredging Tools

- Clam Bucket 48" - 0.7 Cubic Yard
- Clam Bucket 24" - 0.35 Cubic Yard
- Mud Bucket 48" - 0.4 Cubic Yard
- Digging Bucket 18" - 0.2 Cubic Yard
- Tool Rotator
- Hydraulic Reach Extensions

### Aquatic Plant Control Tools

- T-Bar Cutter, For Submersed Weed Control Cuts 10' Swath up to a Depth of 20'
- Flail Chopper, Emergent Plant Control Cuts Cattails and Brush up to a 4" Diameter in a 5' Swath
- Rototiller, Submerged Root Removal Cuts a 6' 6" Swath at up to a 15' Depth
- Clam Rake, 8' Width for Trash/Weed Pick-up and Disposal
- Sweeper Rake, Sweeps Floating Vegetation and Debris in a 20' Wide Swath

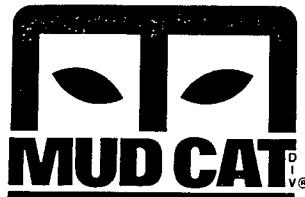
### AQUAMOG SRX 109 SPECIFICATIONS:

|                            |   |
|----------------------------|---|
| <b>Transport:</b>          | Length ..... 32'-10" (10,000 mm)<br>Width ..... 8'-2" (2,500 mm)<br>Height ..... 7'-6" (2,300 mm)<br>Weight ..... 13,800 lbs (6,300 kg)   |
| <b>Working Dimensions:</b> | Length Min. ..... 26'-6" (8,056 mm)<br>Width Max. Operating ..... 14'-2" (4,300 mm)<br>Width Min. ..... 8'-2" (2,500 mm)<br>Height ..... 7'-6" (2,300 mm)<br>Height Above Water Line ..... 6'-3" (1,910 mm)                               |
| <b>Vessel:</b>             | Length ..... 26'-0" (7,925 mm)<br>Width ..... 8'-2" (2,500 mm)<br>Depth ..... 30" (762 mm)<br>Material ..... 10 GA Steel (3.5 mm)<br>Water Tight Compartments ..... 4   |
| <b>Supports:</b>           | Number ..... 2<br>Vertical Movement ..... 90°<br>Depth Max. ..... 9'-0" (2,750 mm)<br>Tires ..... Dual<br>Tire Diameter ..... 33" (840 mm)<br>Tire Width ..... 15" (380 mm)<br>Tire Make ..... Goodyear Terra<br>Tire Size ..... 12.5L-16 |
| <b>Propulsion:</b>         | Dual Independently Reversible Paddle Wheels. ..... 58" dia. x 30" (1480 x 760 mm)<br>Paddle Wheels Retract Hydraulically for Transport.   |

|                              |   |
|------------------------------|---|
| <b>Excavator:</b>            | Depth (at swing pin) ..... 14' (4,300 mm)<br>Horizontal Reach ..... 18' (5,400 mm)<br>Vertical Reach ..... 18'-8" (5,700 mm)<br>Swing ..... 180°  |
| <b>Power Unit:</b>           | Engine ..... John Deere 4039T<br>Model ..... Turbo-Charged<br>Aspiration ..... 108 hp/2,500 rpm<br>Power Rating (Metric) ..... 82 kw/2,500 rpm<br>Electrical System ..... 12 V<br>Fuel Tank Capacity ..... 160 U.S. Gal. (600 liters)   |
| <b>Hydraulic System:</b>     | System Pressure ..... 2,850/2,000 psi (200/140 bar)<br>Pumps ..... 2<br>Pressure Compensated, Variable Volume Pumps and Load Sensing Valves Control 12 Functions.<br>All Speeds are Infinitely Adjustable.<br>Oil Cooling ..... Forced Air<br>Oil Reservoir ..... 78 U.S. Gal. (300 Liters) |
| <b>Control Bridge:</b>       | Cage Type with Roof, Front and Rear Walls with Windows and Open Sides. ..... Visibility 360°  |
| <b>Corrosion Protection:</b> | Epoxy System<br><i>All Specifications Subject to Change Without Notice</i>  |

**Ellicott Machine Corp. "Mudcat"**

## MACHINE SPECIFICATIONS



ELLICOTT MACHINE CORP.

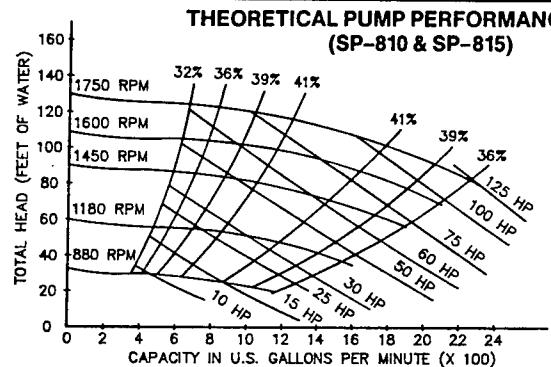
1611 Bush Street  
Baltimore, Maryland  
21230 U.S.A.

MUD CAT machines are operating in a growing list of countries throughout the world. To obtain complete information, call the MUD CAT DIVISION of ELLICOTT MACHINE CORPORATION  
Phone: 301/837-7900, A10 -  
FAX: 301/752-3294 A10 -  
Telex: 87621.

Copyright 1988—  
ELLICOTT MACHINE CORPORATION

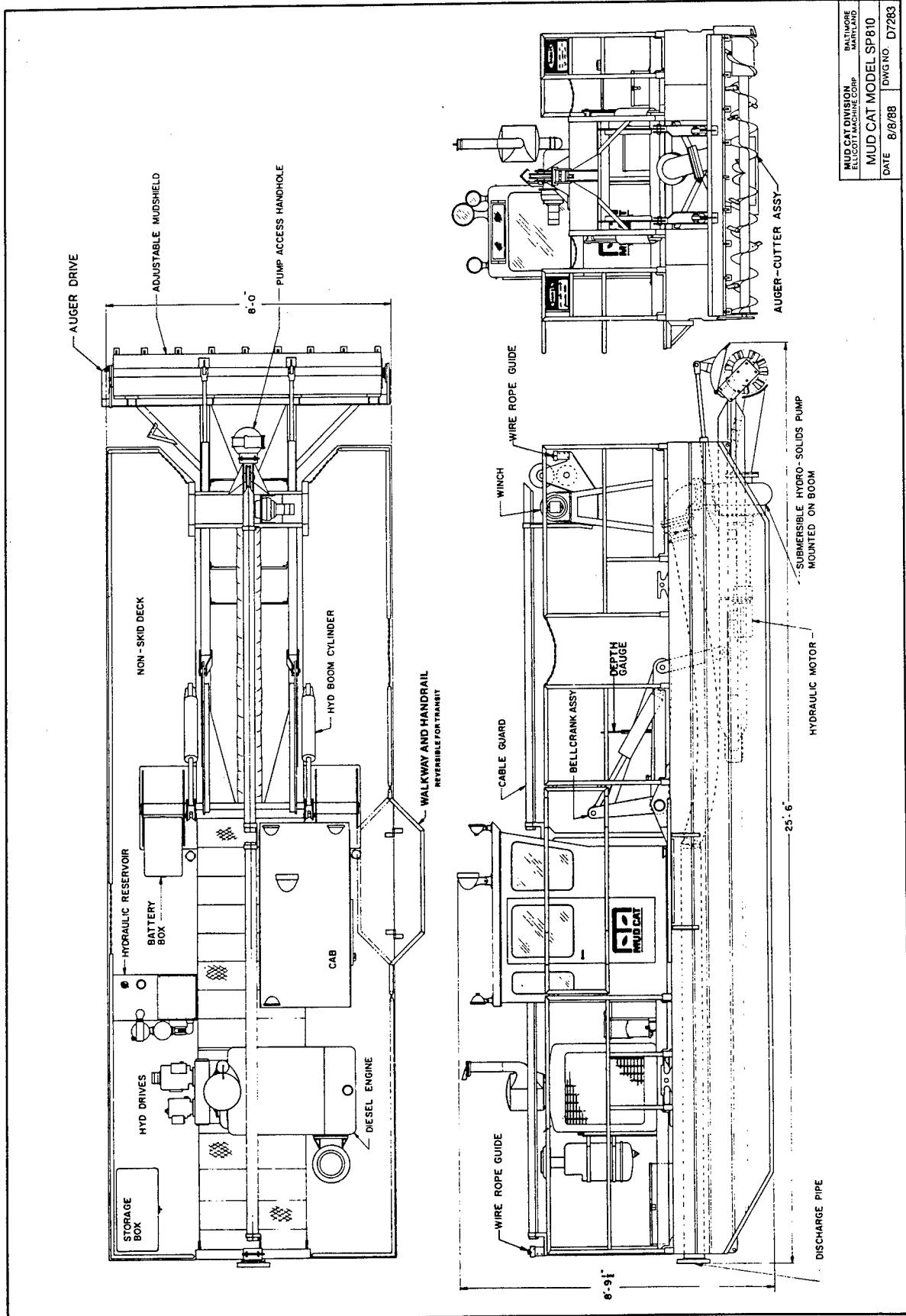
### Model SP-810

|  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|--|---|---|-------------------|---|----------------|---|---------------------------------|---|--------------------------------|--|--|--|---|
| <b>General:</b>  | Length (O.A.) ..... 25'6"   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Width (O.A.) ..... 8'0"   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Height (O.A.) ..... 8'9 $\frac{1}{2}$ "   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Weight ..... 12,200 lbs. dry  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Draft ..... 22"   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Fuel Capacity ..... 100 gallons   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Flotation:</b>  | Pontoons—Two 30" x 32" x 22 $\frac{1}{2}$ " 12 Gauge Steel with Internal Bulkheads and Stiffeners; formed for rigidity; polyurethane foam filled.   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Cutter Assembly:</b>  | <table border="0"> <tr> <td>Auger:</td> <td>Diameter ..... 9"</td> </tr> <tr> <td></td><td>Pitch ..... 9"</td> </tr> <tr> <td></td><td>Flighting ..... <math>\frac{3}{8}</math>"</td> </tr> <tr> <td></td><td>Speed ..... Variable to 89 RPM</td> </tr> <tr> <td></td><td>Cutter Knives ..... Detachable Heat-Treated Blades</td> </tr> <tr> <td></td><td>Auger Torque ..... 11,000 in. lbs. (nominal) 12,000 in. lbs. (peak)</td> </tr> </table>   | Auger:  | Diameter ..... 9" |   | Pitch ..... 9" |   | Flighting ..... $\frac{3}{8}$ " |   | Speed ..... Variable to 89 RPM |  | Cutter Knives ..... Detachable Heat-Treated Blades |  | Auger Torque ..... 11,000 in. lbs. (nominal) 12,000 in. lbs. (peak) |
| Auger:   | Diameter ..... 9"   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Pitch ..... 9"  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Flighting ..... $\frac{3}{8}$ "   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Speed ..... Variable to 89 RPM  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Cutter Knives ..... Detachable Heat-Treated Blades  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Auger Torque ..... 11,000 in. lbs. (nominal) 12,000 in. lbs. (peak)   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Mud Shield:</b>   | 14"x8' Adjustable position  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Working Capacity:</b>   | Cut 8' wide x 18" maximum depth   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Operating Depth ..... 15' maximum   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Engine:</b>   | Detroit Diesel 4-53T Model 5043-8301 w/N-65 injectors; 160 BHP @ 2100 RPM   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Drive:</b>  | Engine ..... Direct Hydraulic Dual Pump Drive   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Pump:</b>   | <table border="0"> <tr> <td>Centrifugal Recessed Impeller</td> <td></td> </tr> <tr> <td>Impeller Diameter ..... 12"</td> <td></td> </tr> <tr> <td>Suction Diameter ..... 6"(8" available as option)*</td> <td></td> </tr> <tr> <td>Discharge Diameter ..... 6"</td> <td></td> </tr> <tr> <td>Nominal Pump Performance ..... 1000 GPM against 100' Head (water) @ 1600 RPM</td> <td></td> </tr> <tr> <td>Lead in Screw (optional)*</td> <td></td> </tr> </table>   | Centrifugal Recessed Impeller                           |                   | Impeller Diameter ..... 12"                           |                | Suction Diameter ..... 6"(8" available as option)*      |                                 | Discharge Diameter ..... 6"             |                                | Nominal Pump Performance ..... 1000 GPM against 100' Head (water) @ 1600 RPM |  | Lead in Screw (optional)*                |   |
| Centrifugal Recessed Impeller  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Impeller Diameter ..... 12"  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Suction Diameter ..... 6"(8" available as option)*                           |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Discharge Diameter ..... 6"  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Nominal Pump Performance ..... 1000 GPM against 100' Head (water) @ 1600 RPM |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Lead in Screw (optional)*  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Hydraulic System:</b>   | <table border="0"> <tr> <td>Variable Displacement, Axial Piston, Hydraulic Pump</td> <td></td> </tr> <tr> <td>Fixed Displacement Hydraulic Motor</td> <td></td> </tr> <tr> <td>Capacity Total ..... 67.6 GPM @ 2100 RPM (engine speed)</td> <td></td> </tr> <tr> <td>Reservoir ..... 30 Gallons at full mark</td> <td></td> </tr> <tr> <td>Circuit One ..... Auger Drive, Boom, Mud Shield and Winch</td> <td></td> </tr> <tr> <td>Circuit Two ..... Centrifugal Pump Drive</td> <td></td> </tr> </table> | Variable Displacement, Axial Piston, Hydraulic Pump     |                   | Fixed Displacement Hydraulic Motor                    |                | Capacity Total ..... 67.6 GPM @ 2100 RPM (engine speed) |                                 | Reservoir ..... 30 Gallons at full mark |                                | Circuit One ..... Auger Drive, Boom, Mud Shield and Winch                    |  | Circuit Two ..... Centrifugal Pump Drive |   |
| Variable Displacement, Axial Piston, Hydraulic Pump                          |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Fixed Displacement Hydraulic Motor   |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Capacity Total ..... 67.6 GPM @ 2100 RPM (engine speed)                      |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Reservoir ..... 30 Gallons at full mark                                      |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Circuit One ..... Auger Drive, Boom, Mud Shield and Winch                    |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Circuit Two ..... Centrifugal Pump Drive                                     |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Relief Valve Setting:   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Auger and Accessories ..... 2000 PSI  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
|  | Centrifugal Pump ..... 3750 PSI   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Propulsion:</b>   | <table border="0"> <tr> <td>Treble Sheave Hydraulic Winch (9" Drum Winch optional)*</td> <td></td> </tr> <tr> <td>Traverse Speed ..... 32 FPM Maximum Forward &amp; Reverse</td> <td></td> </tr> <tr> <td>Average Cutting Speed ..... 8 to 12 FPM</td> <td></td> </tr> </table>   | Treble Sheave Hydraulic Winch (9" Drum Winch optional)* |                   | Traverse Speed ..... 32 FPM Maximum Forward & Reverse |                | Average Cutting Speed ..... 8 to 12 FPM                 |                                 |   |                                |  |  |  |   |
| Treble Sheave Hydraulic Winch (9" Drum Winch optional)*                      |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Traverse Speed ..... 32 FPM Maximum Forward & Reverse                        |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Average Cutting Speed ..... 8 to 12 FPM                                      |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Electrical System:</b>  | <table border="0"> <tr> <td>Voltage ..... 12V</td> <td></td> </tr> <tr> <td>Alternator Output ..... 42 Ampere</td> <td></td> </tr> <tr> <td>Battery ..... 12V, 205 Ampere Hour</td> <td></td> </tr> </table>  | Voltage ..... 12V                                       |                   | Alternator Output ..... 42 Ampere                     |                | Battery ..... 12V, 205 Ampere Hour                      |                                 |   |                                |  |  |  |   |
| Voltage ..... 12V  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Alternator Output ..... 42 Ampere  |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| Battery ..... 12V, 205 Ampere Hour   |   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Finish:</b>   | Polyurethane finish coat on corrosion inhibitive primer.  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>Colors:</b>   | Standard Colors ..... Red, White and Blue   |   |                   |   |                |   |                                 |   |                                |  |  |  |   |
| <b>NOTE:</b>   | Specifications Subject To Change Without Notice.<br>Optional configurations quoted upon request.<br>*These options are recommended for applications involving thick viscous sludges.  |   |                   |   |                |   |                                 |   |                                |  |  |  |   |



Impeller Dia — 12 Inch  
No. of Vanes — 8  
Type of Vanes — Recessed  
S.G. of Liquid — 1.0

**NOTE:**  
The theoretical performance curve indicates capacity for pumping water only. Contact MUD CAT DIV. ELLICOTT for information regarding capacities for pumping material.



## MACHINE SPECIFICATIONS



ELLICOTT MACHINE CORP.

1611 Bush Street  
Baltimore, Maryland  
21230 U.S.A.

MUD CAT machines are operating in a growing list of countries throughout the world. To obtain complete information, call the MUD CAT DIVISION of ELLICOTT MACHINE CORPORATION Phone: 301/837-7900, FAX: 301/752-3294 Telex: 87621.

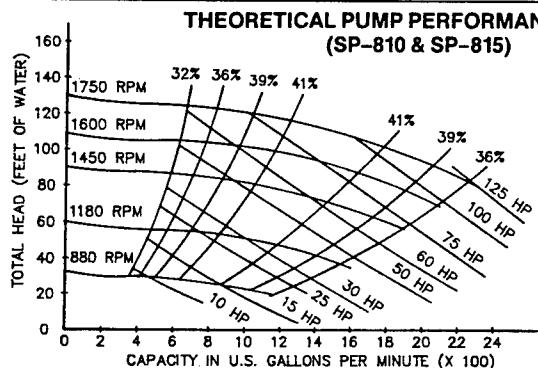
A10

Copyright 1988—  
ELLICOTT MACHINE CORPORATION

### Model SP-815

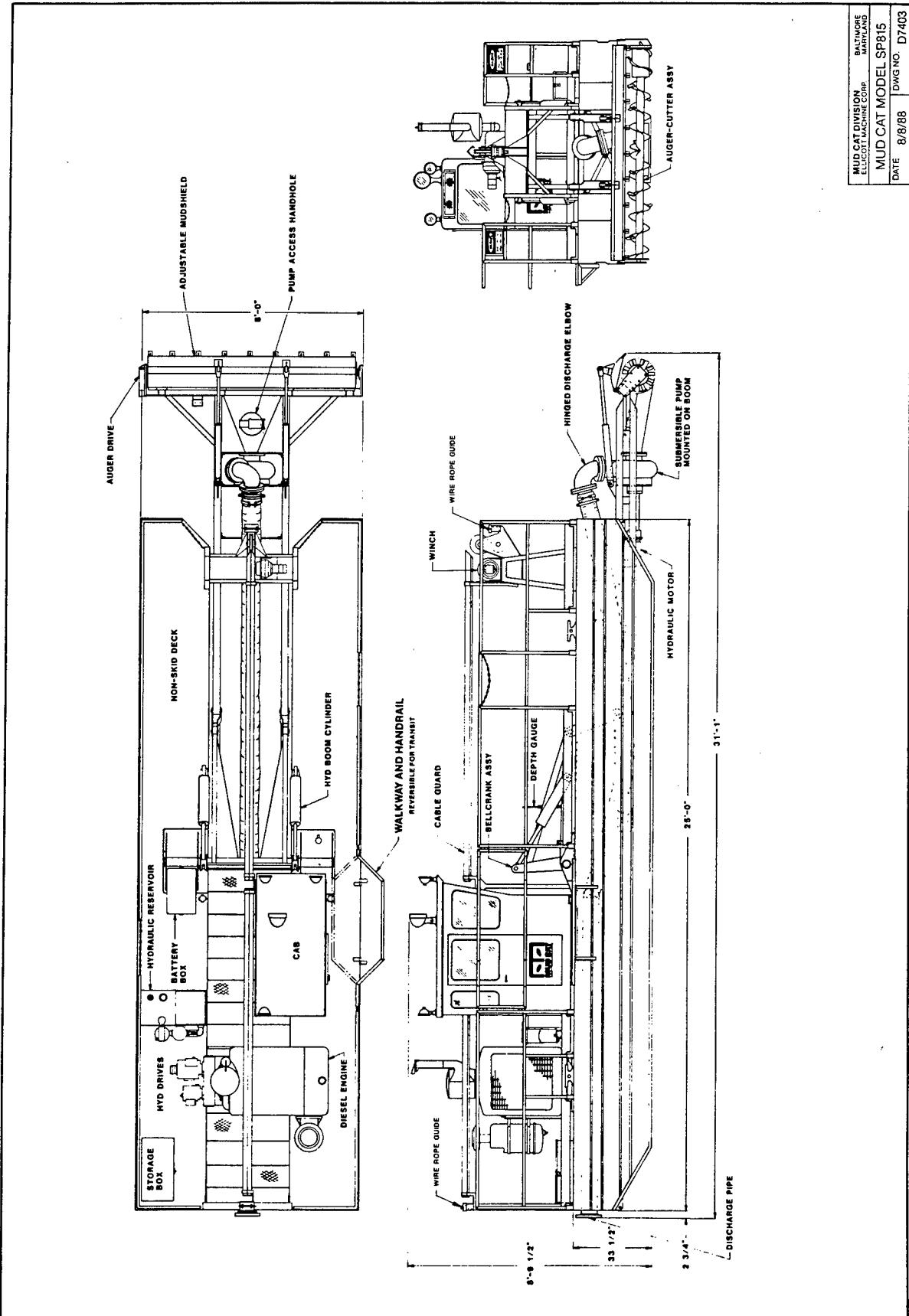
|   |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|---|--|---|-----|------------------------------------|----------------------------------|-----------------------|------------------------------------|--------------------|-------------------------|--------------------------|---|---------------------------|--------------------------------|--------------|--|
| <b>General:</b>   | Length (O.A.) ..... 31'1"  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Width (O.A.) ..... 8'0"  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Height (O.A.) ..... 8'9½"  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Weight ..... 13,200 lbs. dry   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Draft ..... 22"  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Fuel Capacity ..... 100 gallons  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Flotation:</b>                                       | Pontoons—Two 30" x 32" x 25" 12-Gauge Steel with Internal Bulkheads and Stiffeners; formed for rigidity; polyurethane foam filled.   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Cutter Assembly:</b>                                 | <table border="0"> <tr> <td>Auger:</td> <td></td> </tr> <tr> <td>    Diameter</td><td>9"</td> </tr> <tr> <td>    Pitch</td><td>9"</td> </tr> <tr> <td>    Flighting</td><td>¾"</td> </tr> <tr> <td>    Speed</td><td>Variable to 89 RPM</td> </tr> <tr> <td>    Cutter Knives</td><td>Detachable Heat-Treated Blades</td> </tr> <tr> <td>    Auger Torque</td><td>11,000 in. lbs.(nominal)<br/>12,000 in. lbs. (peak)</td> </tr> </table>                                | Auger:  |     | Diameter                           | 9"                               | Pitch                 | 9"                                 | Flighting          | ¾"                      | Speed                    | Variable to 89 RPM                            | Cutter Knives             | Detachable Heat-Treated Blades | Auger Torque | 11,000 in. lbs.(nominal)<br>12,000 in. lbs. (peak) |
| Auger:  |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Diameter  | 9"   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Pitch   | 9"   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Flighting   | ¾"   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Speed   | Variable to 89 RPM   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Cutter Knives   | Detachable Heat-Treated Blades   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Auger Torque  | 11,000 in. lbs.(nominal)<br>12,000 in. lbs. (peak)   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Mud Shield:</b>                                      | 14"x8' Adjustable position   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Working Capacity:</b>                                | Cut 8' wide x 18" maximum depth<br>Operating Depth ..... 15' maximum   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Engine:</b>  | Detroit Diesel 4-53T Model 5043-8301 w/N-65 injectors; 160 BHP @ 2100 RPM  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Drive:</b>   | Engine ..... Direct Hydraulic Dual Pump Drive  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Pump:</b>  | <table border="0"> <tr> <td>Centrifugal Recessed Impeller</td> <td></td> </tr> <tr> <td>Impeller Diameter</td><td>12"</td> </tr> <tr> <td>Suction Diameter</td><td>6"(8" available as option)*</td> </tr> <tr> <td>Discharge Diameter</td><td>6"</td> </tr> <tr> <td>Nominal Pump Performance</td><td>1000 GPM against 100' Head (water) @ 1600 RPM</td> </tr> <tr> <td>Lead in Screw (optional)*</td><td></td> </tr> </table>   | Centrifugal Recessed Impeller                           |     | Impeller Diameter                  | 12"                              | Suction Diameter      | 6"(8" available as option)*        | Discharge Diameter | 6"                      | Nominal Pump Performance | 1000 GPM against 100' Head (water) @ 1600 RPM | Lead in Screw (optional)* |                                |              |  |
| Centrifugal Recessed Impeller                           |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Impeller Diameter                                       | 12"  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Suction Diameter  | 6"(8" available as option)*  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Discharge Diameter                                      | 6"   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Nominal Pump Performance                                | 1000 GPM against 100' Head (water) @ 1600 RPM  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Lead in Screw (optional)*                               |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Hydraulic System:</b>                                | <table border="0"> <tr> <td>Variable Displacement, Axial Piston, Hydraulic Pump</td> <td></td> </tr> <tr> <td>Fixed Displacement Hydraulic Motor</td><td></td> </tr> <tr> <td>Total Capacity</td><td>67.6 GPM @ 2100 RPM (engine speed)</td> </tr> <tr> <td>Reservoir</td><td>30 Gallons at full mark</td> </tr> <tr> <td>Circuit One</td><td>Auger Drive, Boom, Mud Shield and Winch</td> </tr> <tr> <td>Circuit Two</td><td>Centrifugal Pump Drive</td> </tr> </table> | Variable Displacement, Axial Piston, Hydraulic Pump     |     | Fixed Displacement Hydraulic Motor |                                  | Total Capacity        | 67.6 GPM @ 2100 RPM (engine speed) | Reservoir          | 30 Gallons at full mark | Circuit One              | Auger Drive, Boom, Mud Shield and Winch       | Circuit Two               | Centrifugal Pump Drive         |              |  |
| Variable Displacement, Axial Piston, Hydraulic Pump     |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Fixed Displacement Hydraulic Motor                      |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Total Capacity  | 67.6 GPM @ 2100 RPM (engine speed)   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Reservoir   | 30 Gallons at full mark  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Circuit One   | Auger Drive, Boom, Mud Shield and Winch  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Circuit Two   | Centrifugal Pump Drive   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Relief Valve Setting:  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Auger and Accessories ..... 2000 PSI   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
|   | Centrifugal Pump ..... 3750 PSI  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Propulsion:</b>                                      | <table border="0"> <tr> <td>Treble Sheave Hydraulic Winch (9" Drum Winch optional)*</td> <td></td> </tr> <tr> <td>Traverse Speed</td><td>32 FPM Maximum Forward &amp; Reverse</td> </tr> <tr> <td>Average Cutting Speed</td><td>8 to 12 FPM</td> </tr> </table>  | Treble Sheave Hydraulic Winch (9" Drum Winch optional)* |     | Traverse Speed                     | 32 FPM Maximum Forward & Reverse | Average Cutting Speed | 8 to 12 FPM                        |                    |                         |                          |   |                           |                                |              |  |
| Treble Sheave Hydraulic Winch (9" Drum Winch optional)* |  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Traverse Speed  | 32 FPM Maximum Forward & Reverse   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Average Cutting Speed                                   | 8 to 12 FPM  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Electrical System:</b>                               | <table border="0"> <tr> <td>Voltage</td><td>12V</td> </tr> <tr> <td>Alternator Output</td><td>42 Ampere</td> </tr> <tr> <td>Battery</td><td>12V, 205 Ampere Hour</td> </tr> </table>   | Voltage   | 12V | Alternator Output                  | 42 Ampere                        | Battery               | 12V, 205 Ampere Hour               |                    |                         |                          |   |                           |                                |              |  |
| Voltage   | 12V  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Alternator Output                                       | 42 Ampere  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| Battery   | 12V, 205 Ampere Hour   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Finish:</b>  | Polyurethane finish coat on corrosion inhibitive primer.   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>Colors:</b>  | Standard Colors ..... Red, White and Blue  |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |
| <b>NOTE:</b>  | Specifications Subject To Change Without Notice.<br>Optional configurations quoted upon request.   |   |     |                                    |                                  |                       |                                    |                    |                         |                          |   |                           |                                |              |  |

\*These options are recommended for applications involving thick viscous sludges.



Impeller Dia — 12 Inch  
No. of Vanes — 8  
Type of Vanes — Recessed  
S.G. of Liquid — 1.0

**NOTE:**  
The theoretical performance curve indicates capacity for pumping water only. Contact MUD CAT DIV. ELLICOTT for information regarding capacities for pumping material.



MUD CAT DIVISION, BALTIMORE,  
ELLCOTT MACHINE CORP.  
MUD CAT MODEL SP815  
DATE 8/8/88 DWG NO. D7403

## MACHINE SPECIFICATIONS

### Model SP-915



ELLICOTT MACHINE CORP.

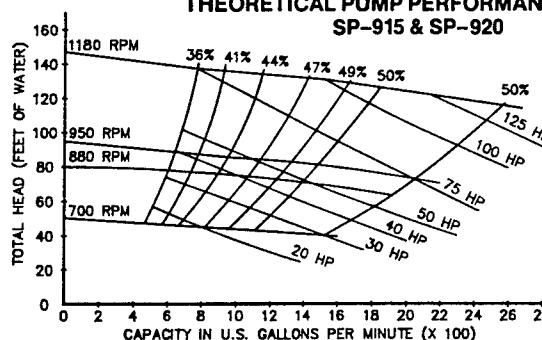
1611 Bush Street  
Baltimore, Maryland  
21230 U.S.A.

MUD CAT machines are operating in a growing list of countries throughout the world. To obtain complete information, call the MUD CAT DIVISION of ELLICOTT MACHINE CORPORATION  
Phone: 301/837-7900,  
FAX: 301/752-3294  
Telex: 87621.

Copyright 1988—  
ELLICOTT MACHINE CORPORATION

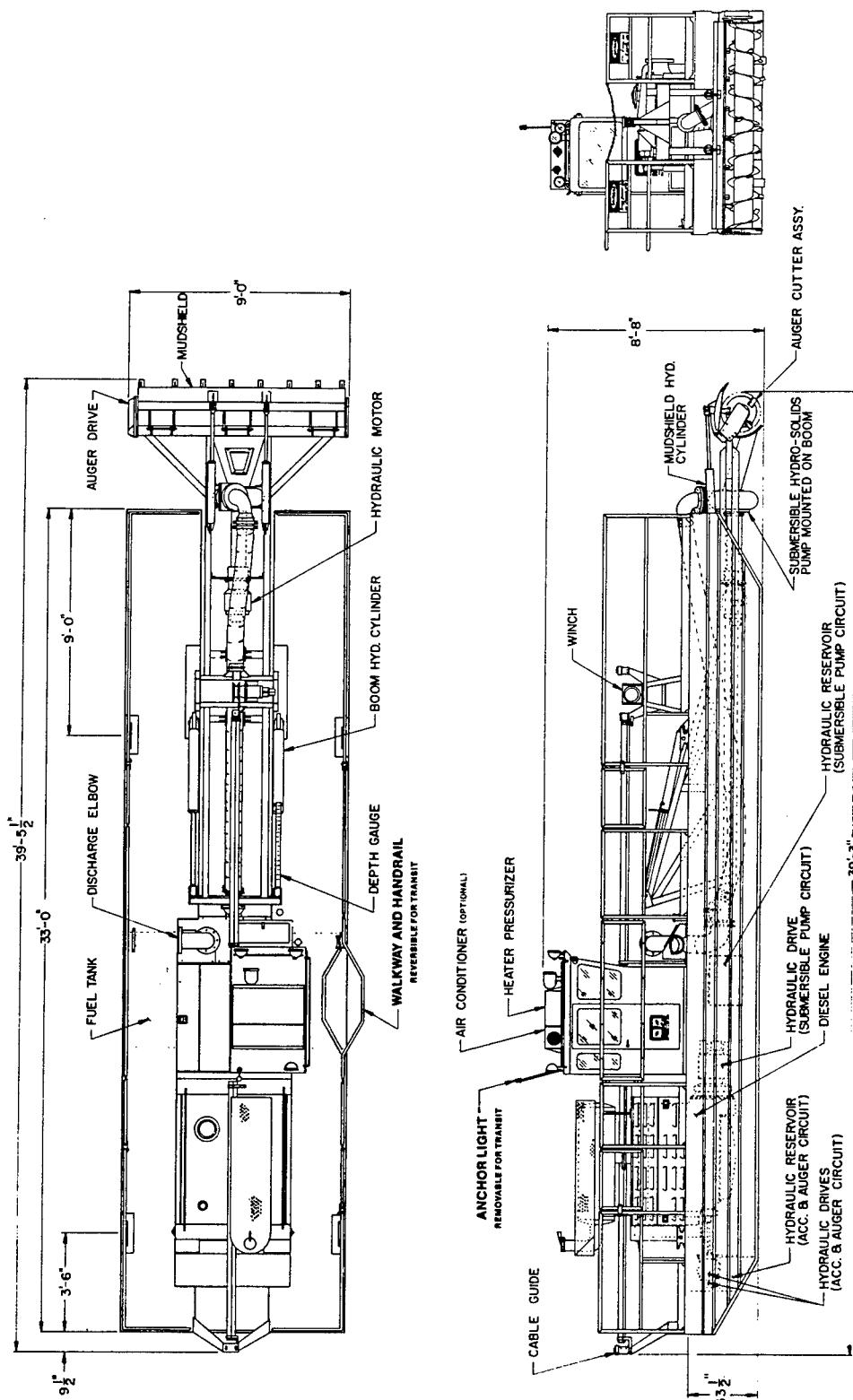
|                           |   |
|---------------------------|---|
| <b>General:</b>           | Length (O.A.) ..... 39'5 $\frac{1}{2}$ "<br>Width (O.A.) ..... 9'0"<br>Height (O.A.) ..... 8'8"<br>Weight ..... 23,000 lbs. dry<br>Draft ..... 21"<br>Fuel Capacity ..... 360 gallons   |
| <b>Flotation:</b>         | Pontoons—Two 36" x 32" x 33'0" 10 Gauge Steel with Internal Bulkheads and Stiffeners; formed for rigidity; polyurethane foam filled.  |
| <b>Cutter Assembly:</b>   | Auger:<br>Diameter ..... 13 $\frac{1}{2}$ "<br>Pitch ..... 11"<br>Flighting ..... $\frac{3}{8}$ "<br>Speed ..... Variable to 92.5 RPM<br>Cutter Knives ..... Detachable Heat-Treated Blades<br>Auger Torque ..... 16,660 in. lbs.   |
| <b>Mud Shield:</b>        | 19"x9' Hydraulically Adjustable   |
| <b>Working Capacity:</b>  | Cut 9' wide x 18" maximum depth<br>Operating Depth ..... 15' maximum  |
| <b>Engine:</b>            | Detroit Diesel 6-71 N; 175 Continuous BHP @ 1800 RPM  |
| <b>Drive:</b>             | Engine ..... Direct Hydraulic Dual Pump Drive   |
| <b>Pump:</b>              | Centrifugal Recessed Impeller<br>Impeller Diameter ..... 18"<br>Suction Diameter ..... 8" (10" available as option)*<br>Discharge Diameter ..... 6"<br>Nominal Pump Performance ..... 2000 GPM @ 1180 RPM against 124' Head (water)<br>Lead in screw (option)*  |
| <b>Hydraulic System:</b>  | Auger and Accessory Drive—Dual Pumps<br>Capacity Total ..... 26.1 GPM @ 1800 RPM (Engine Speed)<br>Reservoir ..... 47 Gallons at full mark<br>Circuit One ..... Auger Drive<br>Circuit Two ..... Boom, Mud Shield and Winch<br>Relief Valve Setting:<br>Auger ..... 3000 PSI<br>Others ..... 1800 PSI<br>Main Pump Drive—Single Pump<br>Variable Displacement Hydraulic Pump<br>Fixed Displacement Hydraulic Motor<br>Capacity ..... 76 GPM @ 1800 RPM (Engine Speed)<br>Reservoir ..... 30 Gallons at full mark<br>Relief Valve Setting ..... 3750 PSI |
| <b>Propulsion:</b>        | Double Wrap Sheave Hydraulic Winch<br>Traverse Speed ..... 31 FPM Maximum Forward & Reverse<br>Average Cutting Speed ..... 8 to 12 FPM  |
| <b>Electrical System:</b> | Voltage ..... 12V<br>Alternator Output ..... 65 Ampere<br>Batteries ..... (2) 12V, 205 Ampere Hour, Parallel Wired<br>Circuits ..... 2 Wire System Full Ground  |
| <b>Finish:</b>            | Polyurethane finish coat on corrosion inhibitive epoxy primer.  |
| <b>Colors:</b>            | Standard Colors ..... Red, White and Blue.  |
| <b>NOTE:</b>              | Specifications Subject To Change Without Notice.<br>Optional configurations quoted upon request.  |

**THEORETICAL PUMP PERFORMANCE CURVE  
SP-915 & SP-920**



Impeller Dia — 18 Inch  
No. of Vanes — 8  
Type of Vanes — Recessed  
S.G. of Liquid — 1.0

**NOTE:**  
The theoretical performance curve indicates capacity for pumping water only. Contact MUD CAT DIV. ELLICOTT for information regarding capacities for pumping material.



MUD CAT DIVISION  
ELLIOTT MACHINE CORP.  
BALTIMORE  
MARYLAND  
MUD CAT MODEL SP915  
DATE 8/8/88 DWG NO. D9185

# MACHINE SPECIFICATIONS

## Model MC-915



ELLIOTT MACHINE CORP.

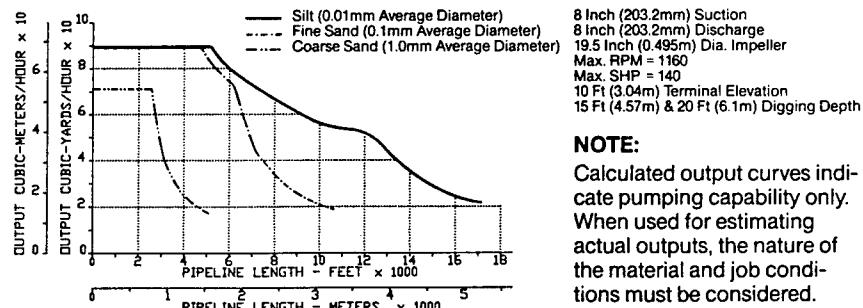
1611 Bush Street  
Baltimore, Maryland  
21230 U.S.A.

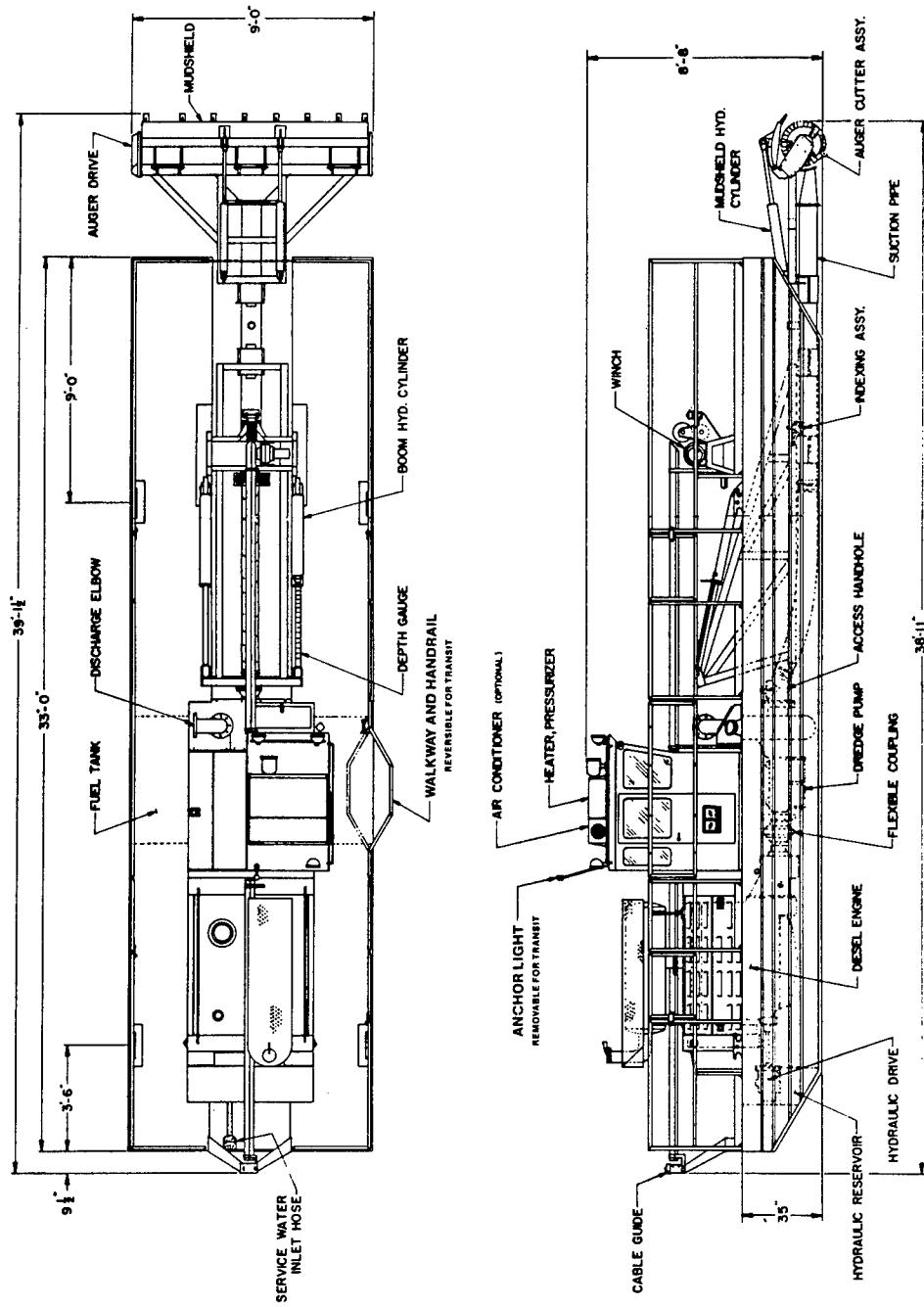
MUD CAT machines are operating in a growing list of countries throughout the world. To obtain complete information, call the MUD CAT DIVISION of ELLICOTT MACHINE CORPORATION Phone: 301/837-7900, FAX: 301/752-3294 Telex: 87621.

Copyright 1988—  
ELLIOTT MACHINE CORPORATION

|  |   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|--|---|--|-------------------|-------------------|----------------------------------|-----------------------|--|--------------------|---------------------------|----------------|----------------------------|--------------------------|---------------------------------------|--------------|-----------------|--------|----------|
| <b>General:</b>  | Length (O.A.) ..... 39'1½"  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|  | Width (O.A.) ..... 9'0"   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|  | Height (O.A.) ..... 8'8"  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|  | Weight ..... 22,000 lbs. dry  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|  | Draft ..... 21"   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|  | Fuel Capacity ..... 360 gallons   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Flotation:</b>  | Pontoons—Two 36" x 32" x 33'0" 10 Gauge Steel with Internal Bulkheads and Stiffeners; formed for rigidity, polyurethane foam filled.  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Cutter Assembly:</b>                                  | <table border="0"> <tr> <td>Auger:</td> <td></td> </tr> <tr> <td>    Diameter</td><td>13"</td> </tr> <tr> <td>    Pitch</td><td>11"</td> </tr> <tr> <td>    Flighting</td><td>¾"</td> </tr> <tr> <td>    Speed</td><td>Variable to 106 RPM</td> </tr> <tr> <td>Cutter Knives</td><td>Detachable Heat-Treated Blades</td> </tr> <tr> <td>Auger Torque</td><td>16,500 in. lbs.</td> </tr> </table> <p>Rotates to Cut Slope up to 45 degrees</p>                               | Auger:   |                   | Diameter          | 13"                              | Pitch                 | 11"                                      | Flighting          | ¾"                        | Speed          | Variable to 106 RPM        | Cutter Knives            | Detachable Heat-Treated Blades        | Auger Torque | 16,500 in. lbs. |        |          |
| Auger:   |   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Diameter   | 13"   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Pitch  | 11"   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Flighting  | ¾"  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Speed  | Variable to 106 RPM   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Cutter Knives  | Detachable Heat-Treated Blades  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Auger Torque   | 16,500 in. lbs.   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Mud Shield:</b>                                       | 19"x9' Hydraulically Adjustable   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Working Capacity:</b>                                 | Cut 9' wide x 18" maximum depth   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
|  | Operating Depth ..... 15' maximum   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Engine:</b>   | Detroit Diesel 6-71N; 228 BHP @ 2100 RPM  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Drive:</b>  | Clutch—Manual, 14" Dia. Disc & Pressure Plate<br>Single Gear Reduction Ratio 1.8:1<br>Drive Coupling—Flexible Element Type  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Pump:</b>   | <table border="0"> <tr> <td>Centrifugal, Closed Impeller, 3 Vane</td> <td></td> </tr> <tr> <td>Impeller Diameter</td><td>19½"</td> </tr> <tr> <td>Suction Diameter</td><td>8"</td> </tr> <tr> <td>Discharge Diameter</td><td>8"</td> </tr> <tr> <td>Shaft Diameter</td><td>2½"</td> </tr> <tr> <td>Nominal Pump Performance</td><td>2000 GPM @ 1160 RPM against 176' Head</td> </tr> </table>   | Centrifugal, Closed Impeller, 3 Vane                     |                   | Impeller Diameter | 19½"                             | Suction Diameter      | 8"                                       | Discharge Diameter | 8"                        | Shaft Diameter | 2½"                        | Nominal Pump Performance | 2000 GPM @ 1160 RPM against 176' Head |              |                 |        |          |
| Centrifugal, Closed Impeller, 3 Vane                     |   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Impeller Diameter  | 19½"  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Suction Diameter   | 8"  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Discharge Diameter                                       | 8"  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Shaft Diameter   | 2½"   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Nominal Pump Performance                                 | 2000 GPM @ 1160 RPM against 176' Head   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Service Water Pump:</b>                               | <table border="0"> <tr> <td>Capacity</td><td>75 GPM @ 2800 RPM</td> </tr> <tr> <td>Pressure</td><td>184 Ft. Total Dynamic Head</td> </tr> </table>  | Capacity   | 75 GPM @ 2800 RPM | Pressure          | 184 Ft. Total Dynamic Head       |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Capacity   | 75 GPM @ 2800 RPM   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Pressure   | 184 Ft. Total Dynamic Head  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Hydraulic System:</b>                                 | <table border="0"> <tr> <td>Dual Pumps</td> <td></td> </tr> <tr> <td>Capacity Total</td><td>30.0 GPM @ 2100 RPM</td> </tr> <tr> <td>Reservoir</td><td>47 Gallons at full mark</td> </tr> <tr> <td>Circuit One</td><td>Auger Drive</td> </tr> <tr> <td>Circuit Two</td><td>Boom, Mud Shield and Winch</td> </tr> <tr> <td>Relief Valve Setting:</td> <td></td> </tr> <tr> <td>    Auger</td><td>3000 PSI</td> </tr> <tr> <td>    Others</td><td>1800 PSI</td> </tr> </table> | Dual Pumps   |                   | Capacity Total    | 30.0 GPM @ 2100 RPM              | Reservoir             | 47 Gallons at full mark                  | Circuit One        | Auger Drive               | Circuit Two    | Boom, Mud Shield and Winch | Relief Valve Setting:    |                                       | Auger        | 3000 PSI        | Others | 1800 PSI |
| Dual Pumps   |   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Capacity Total   | 30.0 GPM @ 2100 RPM   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Reservoir  | 47 Gallons at full mark   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Circuit One  | Auger Drive   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Circuit Two  | Boom, Mud Shield and Winch  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Relief Valve Setting:                                    |   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Auger  | 3000 PSI  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Others   | 1800 PSI  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Propulsion:</b>                                       | <table border="0"> <tr> <td>Treble Sheave Hydraulic Winch (13" Drum Winch optional)*</td> <td></td> </tr> <tr> <td>Traverse Speed</td><td>34 FPM Maximum Forward &amp; Reverse</td> </tr> <tr> <td>Average Cutting Speed</td><td>8 to 12 FPM</td> </tr> </table>  | Treble Sheave Hydraulic Winch (13" Drum Winch optional)* |                   | Traverse Speed    | 34 FPM Maximum Forward & Reverse | Average Cutting Speed | 8 to 12 FPM                              |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Treble Sheave Hydraulic Winch (13" Drum Winch optional)* |   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Traverse Speed   | 34 FPM Maximum Forward & Reverse  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Average Cutting Speed                                    | 8 to 12 FPM   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Electrical System:</b>                                | <table border="0"> <tr> <td>Voltage</td><td>12V</td> </tr> <tr> <td>Alternator Output</td><td>65 Ampere</td> </tr> <tr> <td>Batteries</td><td>(2) 12V, 205 Ampere Hour, Parallel Wired</td> </tr> <tr> <td>Circuits</td><td>2 Wire System Full Ground</td> </tr> </table>   | Voltage  | 12V               | Alternator Output | 65 Ampere                        | Batteries             | (2) 12V, 205 Ampere Hour, Parallel Wired | Circuits           | 2 Wire System Full Ground |                |                            |                          |                                       |              |                 |        |          |
| Voltage  | 12V   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Alternator Output  | 65 Ampere   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Batteries  | (2) 12V, 205 Ampere Hour, Parallel Wired  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| Circuits   | 2 Wire System Full Ground   |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Finish:</b>   | Polyurethane finish coat on corrosion inhibitive epoxy primer.  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>Colors:</b>   | Standard Colors ..... Red, White and Blue.  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |
| <b>NOTE:</b>   | Specifications Subject To Change Without Notice.<br>Optional configurations quoted upon request.  |  |                   |                   |                                  |                       |  |                    |                           |                |                            |                          |                                       |              |                 |        |          |

### CALCULATED OUTPUT CURVES SERIES MC-915 & MC-920 DREDGES



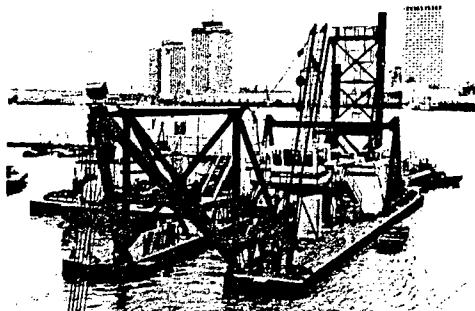


**MUDCAT DIVISION**  
ELLIOTT MACHINE CORP  
BALTIMORE  
MARYLAND  
**MUD CAT MODEL MC915**  
DATE 8/8/88 DWG NO. D9000

**Dredgemasters International "Mudmaster"**

## RESEARCH AND DEVELOPMENT

---



Progress at DredgeMasters International has evolved from our success in solving dredging problems, with each new obstacle demanding a bit more ingenuity than the last. Over the years, various other dredge manufacturers throughout the industry have attempted to develop original designs of one kind or another. Generally, the results of these ventures have either been too costly or too restricted in their application.

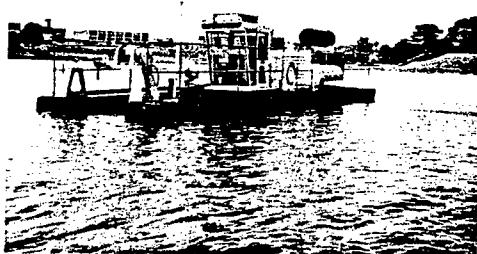
Real technological advances have been closely linked with answers to specific, clearly identified client needs. The MudMaster is indeed a technological breakthrough. It is widely regarded as the most revolutionary machine introduced to the dredging industry in the last quarter of a century.

The MudMaster, like its companion line of standard model DMI dredges, is a product of experienced dredge professionals. The same practicality, performance and quality engineered and built into our larger dredges has been the basic goal in the development of the MudMaster. It is a superbly crafted machine, inspired by a long standing tradition of excellence. It has the strong bloodlines of quality, designed and built to far exceed your production expectations.

This is not just a small dredge. This is a machine that has been critically needed by the dredging industry for years. A machine the industry has been waiting for...has, indeed, been demanding for many years. And now, it's available from DredgeMasters International.

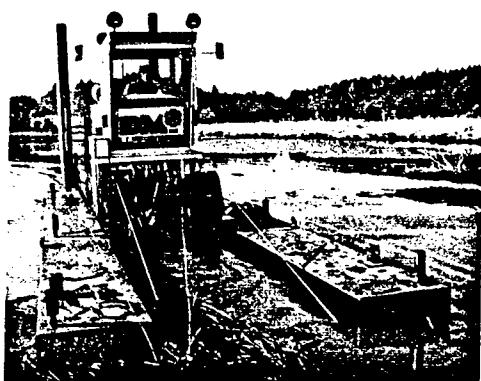
## SIMPLICITY IN DESIGN, FLEXIBILITY IN OPERATION

---



Simplicity is the cornerstone of MudMaster's success. The new arrangement is designed to facilitate economical construction, ease of mobilization and assembly, simplicity of operation and maintenance, and high operating efficiency. The overall design concept features many cost saving ideas which, at the same time, improve performance and reliability. This design also enables the MudMaster to operate and work in extremely shallow depths, which is critically important in the success or failure of many operations.

The flexibility and versatility of the MudMaster is completely unmatched in the industry. It is designed to handle a wide range of projects from cleaning small lakes and ponds, reservoirs and settling basins, to streams, canals, and drainage ditches. It is the first standard model machine ever introduced to back up, unconditionally, claims that other small dredge manufacturers only make. It is designed and built not just for normal small dredge operations, but for an extremely wide range of conditions. It is a truly functional piece of equipment that can be adapted and implemented to satisfy your small dredge needs whatever they may be. A variety of unique interchangeable ladder heads is available, designed to specifically and efficiently handle different materials and job conditions. The MudMaster is the only machine to offer the right tool for the right job.



## PROPERLY ENGINEERED, ENERGY EFFICIENT SYSTEMS

MudMaster offers the broadest range of compact dredges in the world. They are available in six model sizes, from 4-inch, 40 horsepower units, to powerful 10-inch, 275 horsepower machines. Each is designed and engineered to provide for maximum efficiency and production at each model level. This means that you can select a standard model machine which will offer precisely the right amount of power without having to purchase more than you need, or having to overwork an undersized unit. The MudMaster is an innovative engineering concept with properly matched and balanced systems throughout, resulting in higher efficiency ratios at all levels.

Special consideration has been given to insure precise compatibility between the engine and the dredge pump for maximum efficiency and power savings. In a time of energy conservation, it is vital to invest in equipment offering real energy savings. MudMaster is in tune with our critical energy problems. The result is more production at less operating cost. That's important to consider!

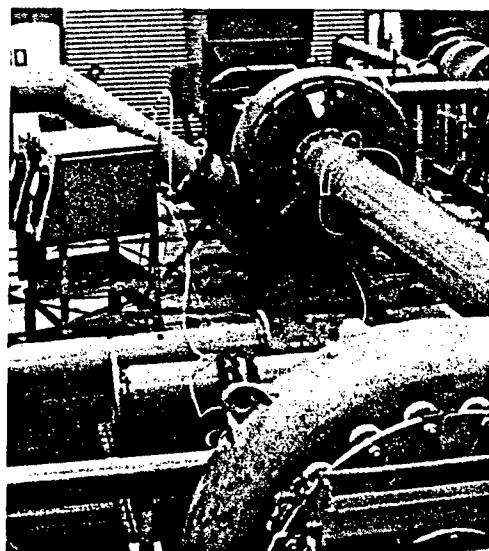
The dredge pump is designed and built to meet the same basic requirements of all HydraMaster pumps—simplicity, efficiency, long service life and smooth performance. Its application means no priming problems, and pump cavitation is virtually impossible. More importantly, the increased operational efficiency of the pump and direct drive result in higher output at significantly reduced power demand...more output, less power consumption...higher profits.

As increasing emphasis is placed on energy conservation, industry is faced with the need to design more fuel-efficient machines. DMI and MudMaster recognize and accept this important challenge.

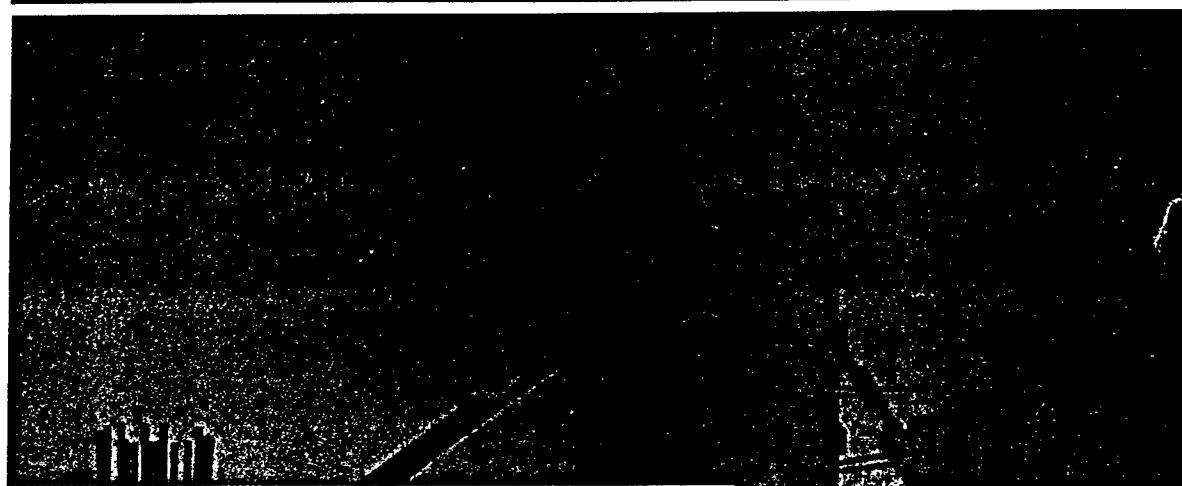
Another prime consideration is the proper balance between cutter excavation capability and swing winch speed and capacity. Both of these systems are designed to complement each other for maximum performance and smooth operation.

MudMaster is also the most portable machine of its kind anywhere. It can be transported from one job to another on one truck and, in most cases, fully assembled, without permits. While in some cases it may be necessary to remove the flotation pontoons, it only takes a few minutes and is hardly a factor when calculating mobilization time.

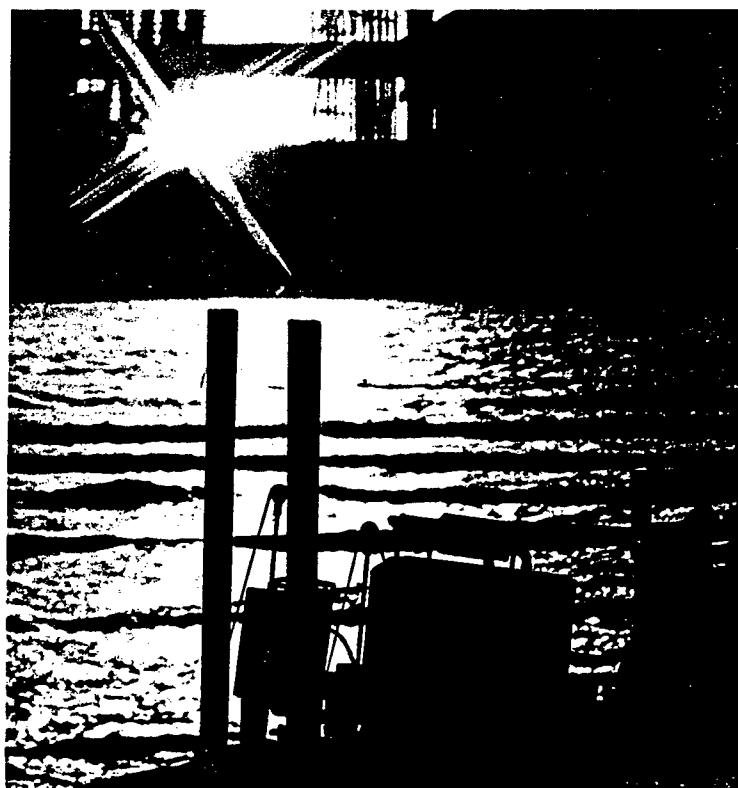
A specially designed road package featuring retractable wheels is also available as a special production option.



## APPLICATIONS



Here at last is a carefully engineered, rugged dredging machine designed and built for small dredging jobs. Tough jobs, like freeing lakes of weed-choked overgrowth, mining coal or cleaning industrial waste settling ponds to meet environmental regulations are routine for the MudMaster. There's practically no limit to its capabilities. This is an amazing unit that can handle jobs the competition wouldn't even consider. It is designed to operate for long periods of time with minimum maintenance. And when maintenance is required, the MudMaster is so designed that maintenance procedures can be facilitated by normal operating personnel. That's an important point to remember when you're working dredges day after day under really tough conditions. Probably the greatest advantage of all is that the MudMaster is engineered, manufactured and guaranteed by DredgeMasters International, Inc., THE DREDGE PEOPLE!



- Maintenance of sewage sludge lagoons.
- Maintenance of canals and boating access areas.
- Maintenance of water works projects of all types.
- Maintenance of fisheries and irrigation projects.
- Maintenance of lakes and marinas, both public and private, launching sites, and recreation areas.
- Maintenance of dock facilities of all types.
- Maintenance of lakes and rivers to prevent silt buildups.
- Construction of dikes, sanitary landfills and land development projects.
- Construction of inland canals.
- Handling wash fines of mining operations.
- Reclaiming coal slurry and coal tailings.
- Recovering sand and gravel as well as other aggregate mining projects.
- Recovering mineral resources.
- Recycling and cleaning fly-ash ponds for environmental and safety purposes.
- Removing vegetation over-growth in all type water or marshy areas.
- Cleaning water areas of dead organic waste materials.
- Cleaning and maintaining manufacturing cooling water ponds of all types.
- Cleaning lagoons, swamps and other marshy areas.
- Cleaning and maintaining waste sites of all kinds, including steel mills, canneries, chemical sites, tanneries, and foundries.
- Cleaning water treatment settling ponds.

*THE LIST IS ENDLESS!*

# COMPLETE LINE

The MudMaster is available in three basic model sizes with a broad range of power applications and pump sizes to fit your specific requirements. The list of options is extensive and includes a number of DMI innovations, all designed to enhance convenience and production, to solve your problems surely and economically.

## MINI-MUDSTER

The MiniMudster is the smaller in the range of small dredges, ranging from 4-inch (100 mm) and 48 horsepower, to 6-inch (150 mm) and 64 horsepower.

## MIGHTY-MUDSTER

The mid-range or medium duty machines ranging from 6-inch (150 mm) and 87 horsepower to 8-inch (200 mm) and 175 horsepower.

## SUPER-MUDSTER

The large range or heavy duty machines that range from 8-inch (200 mm) and 190 horsepower, to 10-inch (250 mm) and 275 horsepower.

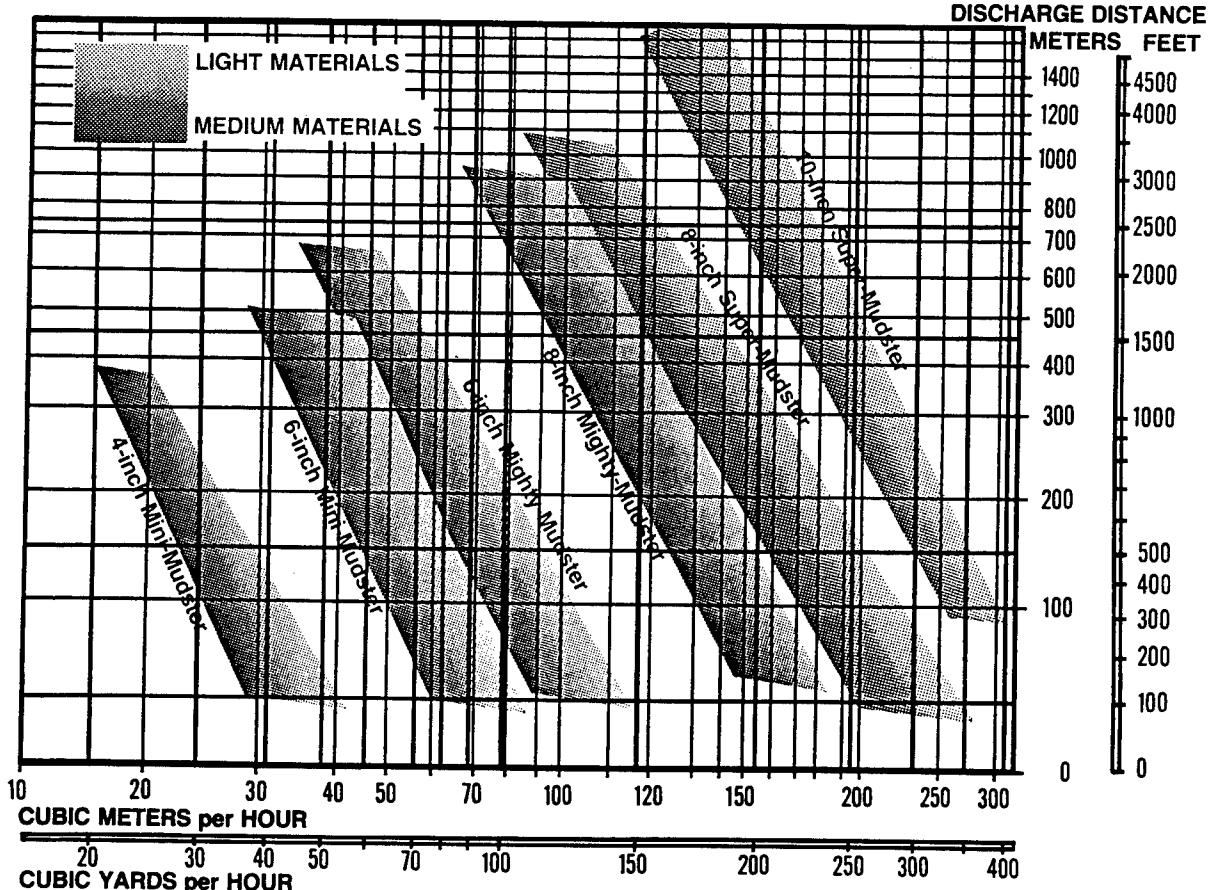
## STANDARD SPECIFICATIONS

| MODEL             | SIZE    | STD*<br>ENGINE | BHP<br>(Cont.) | STD.<br>DREDGING<br>DEPTH<br>(Ft.) | OPERATING<br>WGT.<br>(NOMINAL)<br>(Tons) |
|-------------------|---------|----------------|----------------|------------------------------------|--|
| HP-100 MN         | 4-inch  | GM2-71         | 48             | 10                                 | 9  |
| HP-150 MN         | 6-inch  | GM3-53         | 64             | 10                                 | 10                                       |
| HP-150 MT         | 6-inch  | GM4-53         | 87             | 14                                 | 15                                       |
| HP-200 MT         | 8-inch  | GM6V-71        | 175            | 14                                 | 16                                       |
| HP-200 SM         | 8-inch  | CAT 3306       | 190            | 18                                 | 18.5                                     |
| HP-250 SM         | 10-inch | CAT 3406       | 275            | 18                                 | 19.5                                     |
| AMPHIBIOUS MODELS |         |                |                |                                    |  |
| AHP-150 MT        | 6-inch  | GM4-53         | 87             | 14                                 | 24.5                                     |
| AHP-200 MT        | 8-inch  | GM6V-71        | 175            | 14                                 | 25.5                                     |
| AHP-200 SM        | 8-inch  | CAT 3606       | 190            | 18                                 | 30.5                                     |
| AHP-250 SM        | 10-inch | CAT 3406       | 275            | 18                                 | 32                                       |

\*Alternate engines available as regular production option

Special larger models are also available, custom-built for individual requirements. Please consult DredgeMasters International for details.

## PERFORMANCE CHART



Note: Capacity ranges are calculated for general sizing purposes only and should not be used for any other purpose. Please contact DMI for detailed calculations.

# INTERCHANGEABLE LADDERHEADS

Each MudMaster model is offered with a choice of four basic, interchangeable ladderheads. Each ladderhead has its own unique application and advantages and allows you to adapt one machine to many different jobs, efficiently and economically.

## **ROTATING CUTTERHEAD**

A conventional rotating cutterhead is available for more difficult dredging applications involving clay, compacted sand, gravel and other tough materials. This cutter system also offers a more efficient direct drive, including these important features:

- Sealed Shaft
- Oil Lubricated, Anti-Friction Bearings
- No Service Water
- Minimum Maintenance

## **DUAL CUTTERHEAD**

The new DMI Dual Cutterhead enables the dredge to excavate tough materials with equal effectiveness in both swing directions. This results in much improved operating efficiency, substantially higher output per operating hour.

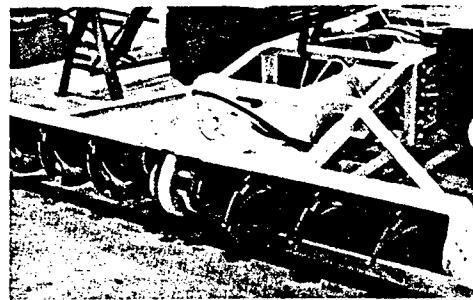
## **REVOLVING HORIZONTAL CUTTER**

A revolving horizontal cutter is available to handle softer materials such as mud, fly ash, light sand, coal tailings, slimes, chemical deposits, sludge and other non-compacted materials. This configuration is very effective in small ponds.

## **OPEN SUCTION "DUSTPAN" ATTACHMENT**

An open suction system to handle most loosely compacted and free-flowing materials. It is an extremely effective and economical option and is available to quickly and easily mount on the MudMaster. This system is available with or without water jets to aid in moving material.

Each of the cutter systems is powered by long-life, gear-type, hydraulic motors, each with variable speed control for optimum operating speed. Each hydraulic circuit is protected against overload damage by automatic pressure relief valves.



# OPTIONAL POSITIONING SYSTEMS

Three optional hauling and positioning systems are available that will adapt the MudMaster to your conditions or operating preference.

## **SWING WINCH SYSTEM WITH SPUDS**

A conventional dredge maneuvering system which is used primarily with the rotating and dual cutterhead attachments.

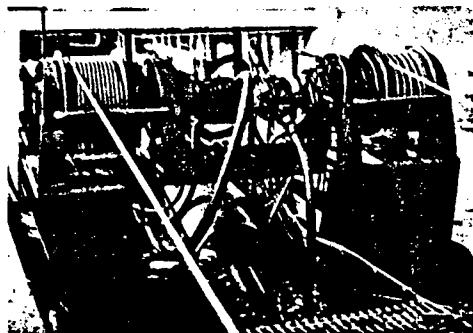
## **FOUR CORNER POSITIONING WITH FAIRLEADS**

An economical system of positioning and maneuvering the MudMaster that can be used in conjunction with any ladderhead configuration.

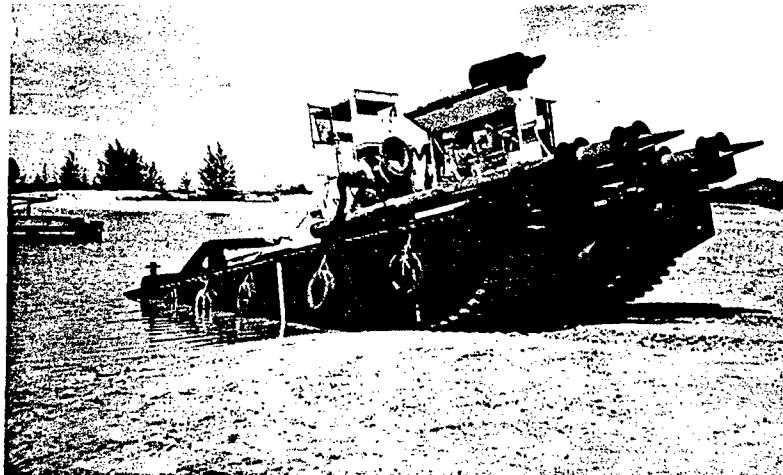
## **SINGLE WIRE LONGITUDINAL HAULING**

A system designed for effectively operating in conjunction with the revolving horizontal cutter or open suction dustpan attachment.

All hauling/positioning systems feature modern, efficient planetary drive hydraulic winches designed and engineered by DMI specifically for their respective purposes. Variable speed control is provided for each winch for optimum operational speed, and each hydraulic circuit is protected against overload by automatic pressure relief valves.



## NO COMPROMISE

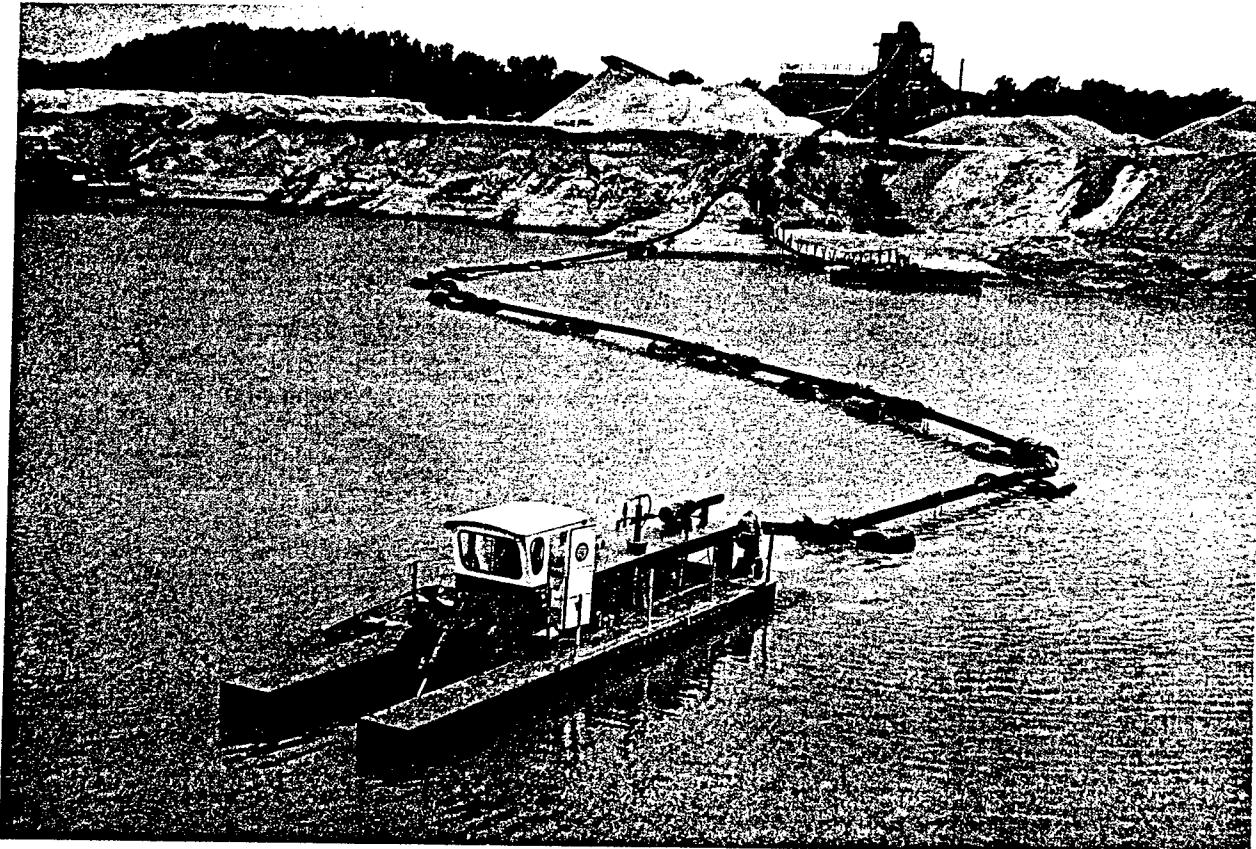


**T**here is absolutely no compromise in the MudMaster. Not in the development and design. Not in the quality of materials or craftsmanship in construction. Not in the quality controls used to monitor each piece of equipment that goes into its assembly. And not in its versatility and production capability, which, from the standpoint of practicality and performance, represents one of the ultimate achievements in the dredging industry.

When you're true to an ideal, achievement is bound to follow. DredgeMasters International has been dedicated and true to the ideal of excellence since its inception, and the new line of MudMaster Dredges reinforces that ideal.

Dredging Supply Co., Inc.      "Barracuda"

# Shark Cutterhead Portable Dredge



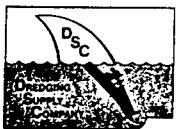
Our SHARK dredges are manufactured in sizes that permit transportation in a fully erect configuration. All models are 11'-10" wide (3.61m), thus allowing the units to be hauled over the highway. The only preparation required for transportation is to pull the spud keeper pin and recline the spuds on the deck.

The cutterhead ladder on all models is powered up and down for maximum digging efficiency. The overall height from the water is 9 feet (2.7m) with the spuds down.

Each dredge is equipped with two spuds. The dredge hull is an all-steel welded, single-piece constructed hull. The hull length is 39'-6" (12.04m).

## General Machinery:

Swing Winches - Hydraulic Planetary  
Spud Winches - Hydraulic Planetary  
Cutterhead - Basket type with replaceable edges  
Cutter Motor - Hydraulic motor  
Cutter Reduction - Gear box  
Main Engine - Diesel (Cummins, Caterpillar or Detroit)  
Engine Cooling - Keel cooling  
Electrical - D.C. System  
Dredge Pump - Pekor or equal  
Service Pump - Peerless  
General - sizes available  
10" (25.4cm)  
12" (30.48cm)



**DREDGING SUPPLY  
COMPANY, INC.**

701 PETERS ROAD  
HARVEY, LOUISIANA 70058  
(504) 367-2314 FAX (504) 368-8359

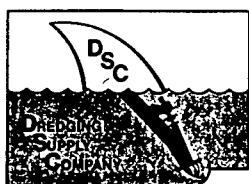
**"The World's Leader in Small Dredges"**

# SHARK CUTTERHEAD DREDGE

## TECHNICAL DATA

|                               | 10 INCH        | 12 INCH        |
|-------------------------------|----------------|----------------|
| <b>DREDGE PUMP:</b>           | 10X10-32       | 12X12-32       |
| <b>MAIN PUMP POWER:</b>       |                |                |
| Caterpillar                   | 3406 TA        | 3408 TA        |
| Continuous Rating             | 322 hp @       | 402 hp @       |
|                               | 1800 rpm       | 1800 rpm       |
| Intermittent Rating           | 402 hp @       | 500 hp @       |
|                               | 2100 rpm       | 2100 rpm       |
| <b>MAIN PUMP DRIVE:</b>       |                |                |
|                               | Tonan TM 729S  | Tonan TM 828S  |
| <b>CUTTER:</b>                |                |                |
| Basket w/replaceable edges    | 31" I.D.       | 34" I.D.       |
| Rating                        | 41 hp @ 34 rpm | 52 hp @ 34 rpm |
| <b>SWING WINCH:</b>           |                |                |
| Pullmaster                    | M-6            | H-8            |
| Line Pull                     | 6000 lb.       | 8000 lb.       |
| <b>SPUD WINCH:</b>            |                |                |
| Pullmaster                    | PL-4           | PL-4           |
| Line Pull                     | 4000 lb.       | 4000 lb.       |
| <b>LADDER RAM:</b>            |                |                |
| Hydraulic Cylinder            | 6" bore        | 6" bore        |
|                               | 2½" rod        | 2½" rod        |
| <b>SERVICE WATER PUMP:</b>    | 2½X2-10        | 2½X2-10        |
| <b>ELECTRIC SYSTEM:</b>       | 24 volt        | 24 volt        |
| <b>GENERAL:</b>               |                |                |
| Length of Hull                | 39'-6"         | 45'-0"         |
| Length Overall                | 61'-0"         | 70'-0"         |
| Beam                          | 11'-10"        | 11'-10"        |
| Hull Depth                    | 4'-0"          | 4'-6"          |
| Ladder Length                 | 31'-0"         | 35'-0"         |
| Dry Weight (approx.)          | 62,000 lb.     | 74,000 lb.     |
| Fuel Oil Capacity             | 800 gals.      | 1000 gals.     |
| Digging Depth, max.           | 28 ft.         | 31 ft.         |
| Cutting width @ max. depth    | 58 ft.         | 65 ft.         |
| Cutting width @ 1'-2" digging | 82'-9"         | 97 ft.         |
| Loads to Transport            | one            | one/two        |

**THE ABOVE BRAND NAMES ARE SUBJECT TO AVAILABILITY OR EQUAL SUBSTITUTION**



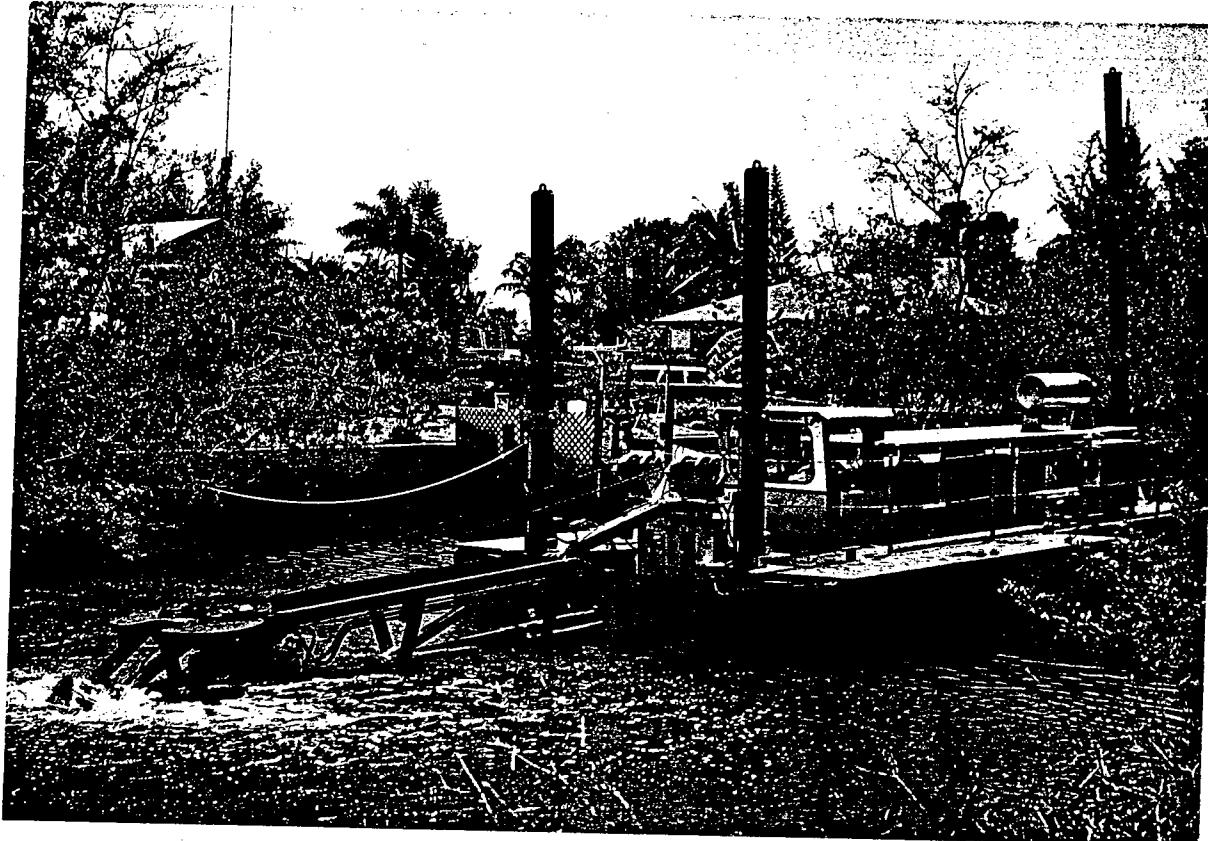
**DREDGING SUPPLY  
COMPANY, INC.**

701 PETERS ROAD  
HARVEY, LOUISIANA 70058  
(504) 367-2314 FAX (504) 368-8359

**"The World's Leader in Small Dredges"**

# BARRACUDA CUTTERHEAD DREDGE

## 8" (20.3cm); 10" (25.4cm); 12" (30.5cm)



This versatile dredge is capable of swinging the cutterhead from side to side and advancing forward without the aid of swing cables and a remote anchoring system.

The unit can easily be converted to a dredge using a conventional anchoring system.

The Barracuda can be transported on one truck from job to job for reduced mobilization and demobilization cost.

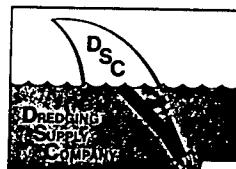
The Barracuda is capable of digging to a depth of 18".

The dredge is portable and the fabricated hull is an all-steel welded, single-piece construction with side stability tanks. The dredge is complete with the spuds, two digging and one walking.

### General Machinery:

Swing Winches - Hydraulic Planetary  
Spud Winches - Hydraulic Planetary  
Cutterhead - Basket type with replaceable edges  
Cutterhead Motor - Hydraulic motor  
Cutter Reduction - Gear box  
Main Engine - Caterpillar or equal

Engine Cooling - Keel cooling  
Electrical - D.C. System  
Dredge Pump - Pekor or equal  
Service Pump - Peerless



### DREDGING SUPPLY COMPANY, INC.

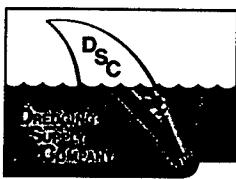
701 PETERS ROAD  
HARVEY, LOUISIANA 70058  
(504) 367-2314 FAX (504) 368-8359

**"The World's Leader in Small Dredges"**

# BARRACUDA SWINGING LADDER DREDGE TECHNICAL DATA

|                               | 8 INCH                | 10 INCH              | 12 INCH               |
|-------------------------------|-----------------------|----------------------|-----------------------|
| <b>DREDGE PUMP:</b>           | 8X8-25                | 10X10-32             | 12X12-32              |
| <b>MAIN PUMP POWER:</b>       |                       |                      |                       |
| Caterpillar                   | 3306 TA               | 3406 TA              | 3408 TA               |
| Continuous Rating             | 260 hp @<br>2000 rpm  | 322 hp @<br>1800 rpm | 402 hp @<br>1800 rpm  |
| Intermittent Rating           | 300 hp @<br>2200 rpm  | 402 hp @<br>2100 rpm | 500 hp @<br>2100 rpm  |
| <b>MAIN PUMP DRIVE:</b>       |                       |                      |                       |
|                               | Tonan TM 729S/Equal   | Tonan TM 729S/Equal  | Tonan TM 828S/Equal   |
| <b>CUTTER:</b>                |                       |                      |                       |
| Basket w/replaceable edges    | 25" I.D.              | 31" I.D.             | 34" I.D.              |
| Rating                        | 25 hp @ 34 rpm        | 41 hp @ 34 rpm       | 52 hp @ 34 rpm        |
| <b>SWING WINCH:</b>           |                       |                      |                       |
| Pullmaster                    | PL-4                  | M-6                  | H-8                   |
| Line Pull                     | 4000 lb.              | 6000 lb.             | 8000 lb.              |
| <b>SPUD WINCH:</b>            |                       |                      |                       |
| Pullmaster                    | PL-2                  | PL-4                 | PL-4                  |
| Line Pull                     | 2200 lb.              | 4000 lb.             | 4000 lb.              |
| <b>LADDER RAM:</b>            |                       |                      |                       |
| Hydraulic Cylinder (2)        | 4" bore<br>1 1/4" rod | 5" bore<br>2" rod    | 6" bore<br>2 1/2" rod |
| <b>WALKING SPUD KICK RAM:</b> |                       |                      |                       |
| Hydraulic Cylinder            | 4" bore<br>2" rod     | 4" bore<br>2" rod    | 4" bore<br>2" rod     |
| <b>SERVICE WATER PUMP:</b>    |                       |                      |                       |
|                               | 2 1/2X2-10            | 2 1/2X2-10           | 2 1/2X2-10            |
| <b>ELECTRIC SYSTEM:</b>       |                       |                      |                       |
|                               | 12 volt               | 24 volt              | 24 volt               |
| <b>GENERAL:</b>               |                       |                      |                       |
| Length of Hull                | 35'-0"                | 40'                  | 40'                   |
| Length Overall                | 54'-9"                | 65'                  | 66'                   |
| Beam with side tanks          | 17'-8"                | 17'-8"               | 17'-8"                |
| Hull Depth                    | 4'-0"                 | 4'-0"                | 4'-6"                 |
| Ladder Length                 | 20'-0"                | 25'                  | 25'                   |
| Dry Weight (approx.)          | 50,000 lb.            | 72,000 lb.           | 83,000 lb.            |
| Fuel Oil Capacity             | 800 gals.             | 900 gals.            | 1000 gals.            |
| Digging Depth, max.           | 13'-6"                | 18'                  | 18'                   |
| Cutting width @ max. depth    | 14'-2"                | 19'                  | 19'                   |
| Cutting width @ surface       | 20'-0"                | 26'                  | 26'                   |
| Loads to Transport            | one                   | one                  | one/two               |

THE ABOVE BRAND NAMES ARE SUBJECT TO AVAILABILITY OR EQUAL SUBSTITUTION



**DREDGING SUPPLY  
COMPANY, INC.**

701 PETERS ROAD  
HARVEY, LOUISIANA 70058  
(504) 367-2314 FAX (504) 368-8359

**"The World's Leader in Small Dredges"**

**Innovative Material Systems Inc.    "Versi-Dredge"**



VOLUME 2, ISSUE 1

### CASE HISTORY

## VERSI-DREDGE® Clears Channels for Luna Pier Harbor Club

### **BACKGROUND**

It had always been Al Towsley's dream to build a marina on his 23 acres of Michigan soybean fields. The property seemed ideal. It was located one hour south of Detroit and had an adjacent canal to Lake Erie. In 1985, with the help of his nephews, construction began. Today, the Luna Pier Harbor Club is a 392-slip, privately owned marina. According to Mel Briskey, Towsley's nephew and one of the current owners, the marina will expand on 8.3 acres of recently purchased land.

### **PROBLEM**

From the start, keeping Luna Pier's channel to Lake Erie clear proved to be a major problem for the developers. Sand

larger basket cutterhead dredges, were often called on to keep the channel open.

The contractors hired to remove the settled sand were also asked to remove 2 feet of virgin clay. It was hoped that by removing the clay layer the channel would take more time to fill in, thus extending the time between required dredgings. According to Briskey, "The real problem was that they weren't doing a real good job. They didn't take any time at all. They were leaving hills out there, and they couldn't even cut that hard, blue clay. The channel would fill up again in about three months time. And we were having trouble with our boaters complaining."

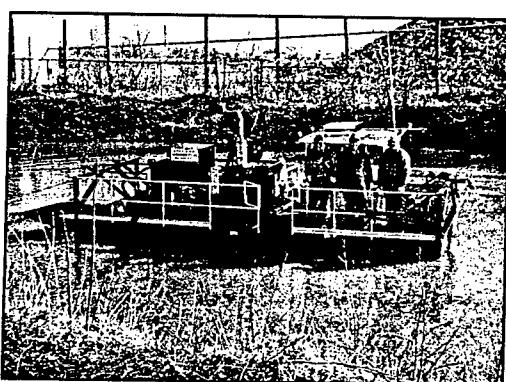
### **SOLUTION**

Last April, the owners of the marina decided to purchase a Model 4010 VERSI-DREDGE®, manufactured by IMS, and do the work themselves. Walleye season had just begun, and Luna Pier's boaters wanted clear access to the lake.

Dean Wickoren, IMS director of new product development, and Jim Saucerman, customer service technician, were on hand for the customary machine start-up and new operator training session. The session lasted two days and allowed

IMS further evaluation of its recently introduced high-pressure dredge pump. The pump easily removed the sand, clay and zebra

(continued on page 2)



Dredge working inside navigation channel

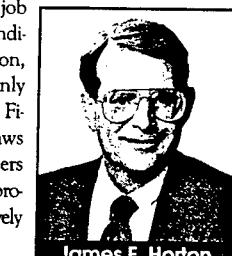
rolling along the western basin of the lake would settle in the club's channel, making it impassable for boaters. Private dredging contractors, utilizing mechanical and

### **LETTER FROM THE PRESIDENT**



Not so long ago, the two-man crosscut saw was the tool of choice in the logging industry. With advances in technology, specifically the introduction of the chain saw, logging has changed a great deal.

Switching to the chain saw made economic sense. Chain saws were small enough to be carried to a job site by a single individual. In addition, they needed only one operator. Finally, chain saws offered consumers more power and production at a relatively low cost.



James F. Horton

Innovative Material Systems is dedicated to developing products that have the same impact on our marketplace as the chain saw had on its. Particularly, we look to improve upon the status quo by producing technology that is more portable, more powerful and more resource-efficient than current products.

I encourage you to read this newsletter and learn more about our small dredge and submersible pump product lines. Welcome to our company, I hope you enjoy "Systems." ♦

### **INSIDE**

## SYSTEMS

|   |   |
|---|---|
| Ask the Expert .....                          | 2 |
| Pump Talk: Digester Cleaning Package .....    | 3 |
| Employee Profile: Barbara Smith .....         | 4 |
| IMS: Your Single Source for Accessories ..... | 4 |

**ASK THE EXPERT**

## Designing a Spoil Area



### What can be done about spoil?



Finding space to store spoil even temporarily may be the most difficult problem a designer faces on a dredging project. IMS can't find space for you, but we can make suggestions that will help utilize available space.

The ideal location for a spoil area is immediately adjacent to the impoundment being dredged on either a perfectly level site or, at most, with a slight slope away from the inlet. It should be large enough for long-term storage of the slurry that will be pumped in clearing the impoundment. If the ideal site exists, the designer of a small project may simply estimate the total volume that will have to be pumped to clear the dredge site and build a spoil area to hold more than that.

On larger projects, available space and money may take precedence. This forces the designer to adapt the site to his needs and sometimes, to tailor the entire dredging project to the spoil area design constraints. A series of tests can be run to assist the designer, and IMS can help our customers in the running and interpretation of these tests. Some of the considerations in spoil area design are:

- ◆ How many cubic yards of material are to be dredged? Add at least 10 percent to this figure for design

purposes. As mentioned above, on small projects and where space is available, this is the spoil area design. Build it to hold the calculated volume and dredge.

- ◆ How much slurry will have to be pumped to dredge this amount of material? In other words, how much material will have to be handled to do the job?
- ◆ Will the material settle out of the slurry? How fast? If a settling test shows that the material will settle out of the slurry and decanting of water is permitted, the volume of the spoil area can be reduced by the amount of water that can be decanted. Settling will only occur in a quiescent setting. Will there be long periods (overnight) when no material is being pumped to the spoil area? The settling test should be limited to this length of time.
- ◆ How rapidly will the material dry to the point where it can be removed or pushed out of the way? This depends not only upon the material but upon the climate. Drying is enhanced by turning the material. This can only be done when fresh slurry is not being added.
- ◆ If settling and decanting appear viable, the material dries readily, and equipment is available to assist in the drying process, consider the construction of multiple cells. The cells

are sized to contain several days production and are used alternately. While a cell is in service, the others are being decanted and dried, and the material is removed or pushed aside.



### What steps must be taken to construct a spoil area?



There is no foolproof recipe for designing and building a spoil area. In designing the spoil area, the designer should avoid being merely hopeful. Apply what is known about the material realistically. Test results are always suspect because it's usually impossible to be certain that the samples are truly representative of the entire site. Be conservative! Few things are more frustrating than having a full spoil area with a third of the site yet to be dredged.

### A FEW SUGGESTIONS

- ◆ Know as much as possible about the behavior of the material.
- ◆ Build the area as large as available space and money permit.
- ◆ Be prepared to operate the spoil area. That is, use all options such as decanting and drying that are economically feasible. ♦

## VERSI-DREDGE® Clears Channels

(continued from page 1)

mussel shells to a spoils area 2,900 feet away at a elevation of 20 feet. Production rates often exceed 100 cubic yards an hour.

Since walleye season, Briskey says, the small dredge has been used to do a more thorough job on the 1,800-foot-long by 30-foot-wide channel, as well as 500 feet of problematic lake area. "It has done a tremendous job," he says. "We've cut through the blue clay — none of the others have ever done that."

### RESULTS

The boaters are very pleased with the changes, according to Briskey. "The

biggest problem has always been the navigable waters off the channel mouth, and we have that well corrected now."

While other marinas in the area are about 40 percent occupied, Luna Pier's rate is up from last year to about 85 percent, Briskey says. The new dredge, he believes, is giving the club an advantage over the competition.

In fact, while some of Briskey's neighbors were initially skeptical of Luna Pier's new dredge, they are now believers. Several have come by to watch the VERSI-DREDGE® run and have even asked Briskey to contract his services. "They have been very impressed

with it. And they should be. We have been very satisfied, and we know that the dredge will pay for itself," he says.

Luna Pier's owners are still undecided as to whether they will take the competitors up and contract the dredge, he adds. "We have put the cost into running our marina, and we are trying our level best to do a good job on our own property!"

For further information on the Luna Pier Harbor Club, please contact Mel or Mike Briskey at 313/848-8777.

\* Registered Trademark of IMS, Inc., Olathe, Kansas. ♦

## PUMP TALK

# Digester Cleaning Package

**A**naerobic digesters require periodic cleaning. This is particularly true in plants without grit and grease removal systems and/or facilities for screening trash.

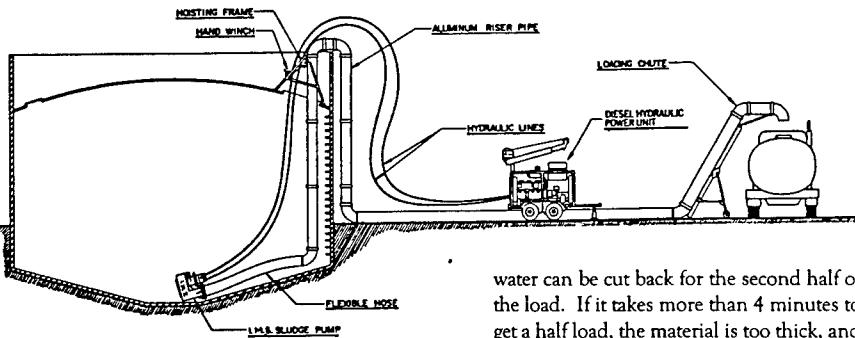
Grease, trash and grit often accumulate to the point where the digester will not function because it can no longer be mixed and heated. This loss of mixing can result in the buildup of sludge and solids so thick that the tank cannot be drained or pumped down using existing plant equipment.

Digesters are usually cleaned by pumping out through the manways in the cover. The material is pumped to sludge beds, lagoons or presses. If pumping direct to disposal is impossible, material may be pumped into a truck for hauling. This can be the most expensive item on a cleaning job.

IMS offers a complete digester cleaning package, including: a diesel/hydraulic or electro/hydraulic power unit, a hydraulically driven sludge pump with slurry gate, a 200-foot pair of hydraulic hoses, riser pipe assembly, a 100-foot discharge hose, a pump hoisting frame with winch, and a truck loading chute.

The usual procedure in setting up a project is as follows:

- ◆ Set up the power unit in an area where it can be easily refueled (if diesel) and serviced.
- ◆ Lower the pump through the large access manhole above the ladder, forcing it through the sludge if necessary.



The thin, easiest to pump material will naturally be pumped out first. As the pump works its way down assisted by the slurry gate, the thicker sludge will form an angle of repose, and the pump finally will be at the bottom of a "cone" of the more solid sludge. At this point, a fire hose should be used to loosen the sludge, causing it to tumble or flow to the pump.

When the center (or low spot if not the center) of the digester floor becomes visible, the pump is moved there and reconnected to the riser pipe with a section of the flexible discharge hose. The sludge left clinging to the digester floor and walls is then "blasted" off with the fire hose and washed to the pump.

The amount of water used to flush the digester can be critical. If the sludge is pumped out too wet, a drying bed or press could be flooded or the number of truck-loads required to haul might increase greatly. If the material is pumped too dry, the press might not handle it or it may not drain from the trucks.

When pumping to trucks, the amount of solids pumped can often be controlled

well enough to avoid disaster by simply timing the loading. For instance, with an 8-inch system, thin sludge will pump at 1,000 g.p.m. and a thick sludge at 400 to 500 g.p.m. A 6,000-gallon truck will load in 6 to 15 minutes.

If it is determined that a sludge that can be handled is produced when the pump is discharging 750 g.p.m., the truck will load in 8 minutes. Time the loading until the truck is half full. If it takes less than 4 minutes, the sludge is too thin and the

water can be cut back for the second half of the load. If it takes more than 4 minutes to get a half load, the material is too thick, and the water should be increased for the second half of the load.

One of the greatest problems normally encountered in digester cleaning is the so-called "ragball." These masses of rags, plastic and string are formed in the rolling action induced by the digester mixer. Many of them are too large to pass through a pump or pipe and are not welcome in a tank truck or pond. Unfortunately, they may have to be lifted out and disposed of separately.

Sand and grit can pose a similar problem. Although they can be pumped out of the digester, they may not drain from a tank truck and often are not wanted by a downstream process. If there are large amounts of grit, it may be necessary to pump out the sludge and handle the grit separately from the sludge.

The digester cleaning packages are available with 6-inch and 8-inch pumps. The 6-inch pump package, provided with 8-inch riser pipe, hose and loading chute, will handle 80 percent of jobs. The 8-inch pump package, which includes 10-inch pipe, hose and loading chute, will handle nearly all jobs. ♦

## Stay Tuned ...

*In our next newsletter,  
"Pump Talk"  
will discuss sewer  
bypass systems.*

# EMPLOYEE PROFILE



**D**uring her four-year career with IMS, Barbara Smith has worn many hats. As our receptionist, she is the first person to speak to customers, and therefore is the first impression they receive of our company. Her highly visible position, combined with her knowledge of IMS, our products, and our staff, makes her a valuable resource for customers and prospects.

She also is regarded highly by co-workers. "Barbara has a very helpful attitude and possesses an appropriate sense of urgency when dealing with our customers," says IMS President Jim Horton. "We have complete confidence in her ability to handle simultaneous projects in addition to helping customers when they call."

Barbara also is administrative assistant to Jim, and handles a range of office functions, including travel arrangements, invoices and ordering office supplies.

Despite her importance to IMS, Barbara emphasizes her greatest accomplishment has been raising a daughter by herself. Gabriella, now a 17-year-old high school honor student, has high aspirations like her mother, who is attending college at night. "You're never too old to learn something new," Barbara says.

Not only is Barbara a dedicated mother and a hardworking employee in pursuit of a college degree, she also sells Mary Kay cosmetics and is a zealous dancer. In fact, she ballroom dances three times a week and considers

dancing to be her ultimate stress-reliever: "It's about the same price as a therapist. So I do it for myself!" she says.

An intriguing past has contributed to Barbara's zest for life. She lived in Germany for 20 years and England two years before moving to the United States in 1965. While she misses the delicious foods of Germany and England's traditional tea time, she loves the wide open spaces of America.

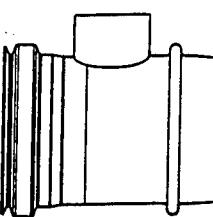
"I would like to resume my travels one day, and the Far East will probably be my first stop," she says. Until then, IMS appreciates Barbara's many contributions to our growing business. ♦



Barbara Smith

## IMS: Your Single Source for Accessories

**I**n addition to its dredge and pump line, IMS carries a full range of discharge line accessories. These items range from routine valves (check valves, shut-off valves, etc.), to made-to-order adapters, to discharge hose and pipe. IMS is a distribution source for dredging and pumping products from manufacturers such as Goodyear (discharge hose), Phillips Petroleum (discharge pipe), and Gheen (quick disconnect fittings). If you have a need, chances are IMS has the answer. For further information on our line of parts and accessories, please call: 800/800-4010.



## Environmental Fact

Americans, including U.S. businesses, use about 90 billion gallons of groundwater every day; 14 percent is drinking water. Contamination of this water comes from dangerous chemicals that end up in unmonitored pits and lagoons. The EPA has found 98 percent of these dump sites within a mile of underground drinking water, and 93 percent of them threatened groundwater supplies.



**IMS**

**INNOVATIVE MATERIAL SYSTEMS, INC.**  
Dredges, Pumps & Pumping Systems

P.O. Box 2987  
Olathe, KS 66063 - 7987

BULK RATE  
U.S. POSTAGE  
PAID  
KANSAS CITY, MO  
PERMIT NO. 3657



Oceaneering Technologies      "TCCD"

## A New Device for the Retrieval of Contaminated Marine Sediments The Total Containment Clamshell Dredge

Oceaneering International, Inc. is currently developing a new underwater excavation device that has been specifically designed for contaminated sediment retrieval. The patent pending Total Containment Clamshell Dredge (TCCD) is designed to precision dredge "hot" zones while minimizing all possibilities of spreading the contamination. Two primary objectives were set during the TCCD design. The first objective was that disturbed sediments would not be able to escape the system. The second was that the volume of associated water be kept to an absolute minimum.

Total containment is accomplished by incorporating a hyperbaric soil receiving chamber. This is an air void that provides space for the incoming sediments. This void eliminates the displacement of an equal volume of contaminated water. It also minimizes the volume of associated water captured with each "bite" of sediment. Leakage containment is assured by operating in a negative pressure differential mode. Essentially, the pressure within the system is adjusted to be less than the ambient water pressure during system operation. This results in leakage into the apparatus rather than outward.

Total containment is further assured by active silt curtains. Hard curtains that seal against the sides of the clamshell buckets are lowered to close off the gap between them during closure. This prevents disturbed soil from extruding out of the system.

A working prototype of the TCCD is currently in factory testing with operational field testing scheduled in the early spring of 1996. The TCCD will be produced in three sizes to accommodate a variety of applications and is designed to use a vessel of opportunity as a floating base which provides the flexibility to bid projects in any market area.

With the TCCD, Oceaneering International will continue to be a leading international participant in the field of underwater contaminated sediments operations.

# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC20503.

|   |   |   |   |
|---|---|---|---|
| 1.AGENCY USE ONLY (Leave blank)   |   | 2.REPORT DATE<br>September 1996   | 3.REPORT TYPE AND DATES COVERED<br>Final report |
| 4.TITLE AND SUBTITLE<br>Equipment for Contaminated Sediment Dredging  |   | 5.FUNDING NUMBERS   |   |
| 6.AUTHOR(S)<br>Trimbak M. Parchure  |   |   |   |
| 7.PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br>U.S. Army Engineer Waterways Experiment Station<br>3909 Halls Ferry Road<br>Vicksburg, MS 39180-6199   |   | 8.PERFORMING ORGANIZATION REPORT NUMBER<br>Technical Report<br>HL-96-17 |   |
| 9.SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)<br>U.S. Army Corps of Engineers<br>Washington, DC 20314-1000   |   | 10.SPONSORING/MONITORING AGENCY REPORT NUMBER                           |   |
| 11.SUPPLEMENTARY NOTES<br>Available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.   |   |   |   |
| 12a.DISTRIBUTION/AVAILABILITY STATEMENT<br>Approved for public release; distribution is unlimited.  |   | 12b.DISTRIBUTION CODE   |   |
| 13.ABSTRACT (Maximum 200 words)<br>The objective of the present task was to compile the latest available information on equipment, procedures, and monitoring techniques for dredging contaminated sediments. A readily available published document offering technical information collected under this project will benefit the U.S. Army Corps of Engineers and others involved in dredging of contaminated sediments. |   |   |   |
| 14.SUBJECT TERMS<br>Contaminated sediment<br>Dredger<br>Dredger survey<br>Dredging  |   | 15.NUMBER OF PAGES<br>100   |   |
|   |   | 16.PRICE CODE   |   |
| 17.SECURITY CLASSIFICATION OF REPORT<br>UNCLASSIFIED  | 18.SECURITY CLASSIFICATION OF THIS PAGE<br>UNCLASSIFIED | 19.SECURITY CLASSIFICATION OF ABSTRACT                                  | 20.LIMITATION OF ABSTRACT                       |